AMERICAN

RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, *Editor.*

ASSISTANT EDITORS:

JAMES T. HODGE, *For Mining and Metallurgy.*
CHARLES T. JAMES, *For Manufactures and the Mechanic Arts.*
M. BUTT HEWSON, *For Civil Engineering.*

SATURDAY, JULY 20, 1850.

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ESTABLISHED IN 1831.

NEW-YORK:

PUBLISHED WEEKLY, BY

JOHN H. SCHULTZ & CO.

Room 12, Third Floor,

No. 136 Nassau Street.

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burtt, J. & J. Rogers, Saltus & Co., J. R. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

F. & T. TOWNSEND.

Albany, August 18, 1849.

FARMERS! ATTENTION!!

John Mayher & Co's

NEW AGRICULTURAL WAREHOUSE AND SEED STORE,

197 WATER STREET, NEW YORK.

Where they have for Sale, the largest and most complete assortment of Farming Implements, ever offered for sale in this city—all of which they will sell 10 per cent. Cheaper than the same kind of Goods can be bought at any other house in the city. Our Goods are all Warranted to give satisfaction.

FARMERS wanting to purchase, will please call and examine our *Stock* before buying elsewhere.

Among our assortment may be found the Celebrated Highest Premium Eagle Ploughs! together with all the most approved Ploughs now in use.

Also,—Horse Powers, Threshing Machines, Fan Mills, Corn Shellers, Straw Cutters, Corn Mills, Seed Sowers, Churns, Ox Yokes, Ox Scrapers, Hay Rakes, Horse Rakes, Patent Chain Pump (that never freezes nor rusts), and other Pumps; in fact we have everything for Farming Purposes—together with Guano, Bone Dust and other Fertilizers.

JOHN MAYHER & CO.,
197 Water st., N. Y.

February 9, 1850.

N.B.—J. M. & Co. also continue their Old Stand, at 195 Front street, near Fulton Market.

Machinery Oil.

WE the undersigned are now manufacturing an oil intended for the use of Railroads, Steamers and Manufacturing establishments. It has been in use several months and has given very general satisfaction. Our price is uniformly 70 cts. per gallon Enquiries or or orders attended to promptly. Address

ROBBINS, LANGDON & CO.,
133 Water street, corner Pine, New York.

CERTIFICATES.

Providence, March 22d, 1850.

Messrs. Robbins, Langdon & Co.,

Gentlemen: We have given your machine oil a thorough trial, and find that it possesses all the qualities that we could wish, as it works better than any sperm oil we have ever used. Our shafts that required oiling four times a day with the best sperm oil that we could get, work equally as well by the application of your oil twice a day, and your oil stands cold weather much better than any oil we have ever used. Our engineer having had years' experience in running and making engines, we put great confidence in his judgment, and he gives it as his opinion that your oil is fully equal to if not better than any he ever used; and we shall soon give you an order for more, as we do not want any other kind of oil as long as we can get yours.

Very respectfully yours,
JACKSON, CLARK & CO.

—

Bridgeport, Nov. 7th, 1849.

Messrs. Robbins, Langdon & Co.,

Gentlemen: After about three months' trial of your oil, I have come to the conclusion to use it entirely on the engines on the New York and New Haven and the New Haven and Northampton Railroads for the following reasons:

1. It wears quite as long as sperm oil.
2. So far as I have tried it, it keeps the Journals equally cool as sperm oil.
3. I have no complaint from our men about cleaning the engines, and presume it is equally as easy to clean an engine by using your oil as it is in using sperm oil.
4. I can see no reason why it is not equal to the best of sperm oil for lubricating machinery.
5. There is in my opinion a very great saving to all parties in using your oil for lubricating machinery.
6. I believe it will stand cold weather better than any sperm oil. Very respectfully yours,

R. B. MASON, Supt. N.Y. & N.H. Railway.

Steamer Bay State, Oct. 22d, 1849.

Messrs. Robbins, Langdon & Co.,

Gentlemen: In answer to your request for my testimony as to the machinery oil manufactured by you, I will say that I have used it for some time past on the Bay State, and am perfectly satisfied that your statement to me of its good qualities, is correct. As far as its lasting properties go, it wears equally long as sperm oil, runs perfectly free, and has no appearance of thickening. As seeing is better than hearing, I would recommend you to send your friends on board our boat, and they can then, by ocular demonstration, judge for themselves. Yours repectfully, JOHN GRAY,
Engineer of Steamer Bay State, Pier 3, N.R.

—

Steamboat Knickerbocker, Sept. 22, 1849.

Gentlemen: Mr. Hall, Agent of the Norwich and New London Steamboat Co., placed in my hands some of your machinery oil, which he desired me to use on the engine and other machinery, which I have done, and was so much pleased with the working, that I recommended the owners to give you their orders.

I have been using the article since August 19, and with perfect satisfaction, and I am well satisfied that your oil is as good as the best of sperm for lubricating machinery. I am yours very respectfully,

SAMUEL CARTER,
Engineer of Steamboat Knickerbocker, Pier 18, N.R.
To Messrs. Robbins, Langdon & Co.,
Oil Merchants, 133 Water street, New York.

—

Steamboat Worcester, N. York, Oct. 15, 1849.

Messrs. Robbins, Langdon & Co.,

Gentlemen: I beg to acknowledge the receipt of your letter requesting my opinion as to your oil for machinery, which I had not time to reply to previous to my return to Norwich. I have been using your oil on the engine and machinery of the Worcester with perfect success, and have much pleasure in testifying as to its good qualities. In my opinion, the journals keep cooler with your oil than with sperm, and it wears equally well. Should you at any time wish to refer to me as to your oil, I beg you will do so without hesitation. Yours respectfully, JAS. CROOKER.
Engineer Steamboat Worcester, Pier 18, N. R.

—

New York, August 3d, 1849.

Messrs. Robbins, Langdon & Co.,

Gentlemen: I received your letter in regard to your oil for machinery, which I handed to our engineer, and have much pleasure in sending you an extract from his letter to me on the subject: "I have applied the oil sent me upon our hot journals and cylinders, and find that they keep cooler with it than with sperm oil. I cannot find any fault with the oil, although I have watched it carefully. I have also tried it against an equal quantity of sperm oil, and find it wears quite as well." You are quite at liberty to show this extract to your friends, and shall be happy to give any further certificate you may require. WM. RIDER,
Treasurer Union India-rubber Co., 19 Nassau st. N.Y.

—

New York, March 22d, 1850.

Messrs. Robbins, Langdon & Co.,

Gentlemen: I have been using your machinery oil on the engine and other machinery of the Steamer Southerner running from this to Charleston, and find it equal to sperm oil. I shall continue the use of the same, and you are at liberty to refer to me at any time.

Yours respectfully, DAVID N. MAXON,
Chief Engineer Steamer Southerner.

—

Steamboat C. Vanderbilt, N. York, Oct. 11, 1849.

Messrs. Robbins, Langdon & Co.,

Gentlemen: In reply to your inquiries respecting the qualities of your machinery oil, I am happy to inform you that I have been using the article sent me for some time past, not only on the engine but on all other machinery connected with it: and from a careful and close examination, I am well satisfied that your oil is as good as the best of sperm oil for lubricating machinery. I have recommended Mr. Lockwood the agent of the company, to give you their orders.

Yours respectfully, JAMES BAKER,
Engineer Steamboat C. Vanderbilt, Pier 3, N.R.

—

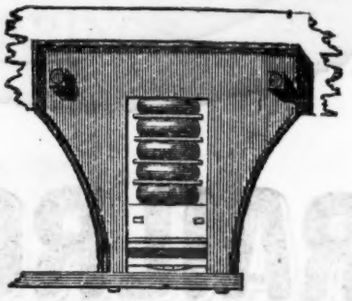
Brooklyn, August 29, 1849.

Messrs. Robbins, Langdon & Co.,

Gentlemen: Your letter of the 29th was received, and I am happy to inform you that I have used your machinery oil throughout my establishment, and I am still of the opinion that it is as good as the best of sperm oil for lubricating machinery. I should be pleased at any time to have your friends witness the working, and I am sure, after once doing so, will give you their orders. Please send me another cask by the evening of the 3d, and by so doing you will much oblige,

W. M. BURDON, Manufacturer of
Steam Engines and other Machinery, 102 Front st.

FULLER'S PATENT INDIA RUBBER SPRING.



THESE SPRINGS ARE THE CHEAPEST, the lightest and most durable of any yet known. They are easily applied to new or old cars, and there is small possibility of any accident occurring to them.

Other parties through Mr. Ray set up claims to an India Rubber Spring which, though the same in principle, is very inferior in its working and durability.—Actions are in progress for an Infringement on Fuller's Patent against parties using that Spring.

The superiority of Fuller's Spring over that claimed by Mr. Ray is fully established and has frequently been testified to. The following are from gentlemen who have had much experience with both Springs.

—

"It will afford me pleasure to recommend your springs to the companies in this region, in preference to Ray's which I am confident are inferior in mechanical arrangement to yours." JOHN M'RAE,
Engineer S. Carolina R. R., Charleston.

—

"I do not hesitate to allow you to say that I concur in Mr. M'Rae's opinion that Ray's springs are inferior in mechanical arrangement to Fuller's. I repeatedly expressed that opinion long before Mr. M'Rae had seen your springs (as I believe) and entertain it still." WM. PARKER,
Gen'l Supt. of Baltimore and Ohio R. R.

—

Office of Sup't Norwich & Worcester R.R Co.,
December 26, 1849.

"I most fully concur in the opinion of Jno. McRae, Engineer of S. Carolina Railroad, that 'Rays Springs are inferior to Fuller's Springs;' and shall with pleasure recommend them to all Railroad Companies for adoption. I have used both springs on this road and have no hesitation in saying that I should in all cases prefer Fuller's Spring."

SAM'L H. P. LEE, JR.,
Sup't and Engineer.

—

Office B. & P. R. R. Co.,
Boston, 20th December, 1849.

"This company have cars fitted up with both Ray's and Fuller's 'Metallic India Rubber Springs,' and I do not hesitate to say that Fuller's arrangement is *very much superior* to Ray's.

W. RAYMOND LEE, Supt.

—

The following result has been obtain d by experiment upon one railroad.

A set of Trucks fitted with Steel Springs cost	$190·77	and weigh	2355 lbs.
The same with Fuller's Springs, . . .	131·71	"	1911 lbs.
Difference, . .	$59·06	"	444 lbs.

Not only is there an advantage in the cost, but owing to the great reduction in weight, the car can be made lighter throughout, and so an enormous saving in weight may be effected in a Train.

AGENTS.

G. M. KNEVITT, 38 Broadway, N. Y.,
JOHN THORNLEY, 110 Chestnut St., Philad.
The BOSTON BELTING CO., Milk st., Boston.

January 2, 1850.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.

May 28, 1849.

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc. STARKS & PRUYN, of Albany, New York, having at great expense establishe.' a manufactory with every facility of Machinery for Manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of Wrought Iron Work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc. —and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

Charles Cook, Nelson J. Beach, Jacob Hinds,	Canal Commissioners of the State of New York.
Willard Smith, Esq.,	Engineer of the Bridges for the Albany Basin.
Messrs. Stone & Harris, Mr. Wm. Howe,	Railroad Bridge Builders, Springfield, Mass.
Mr. S. Whipple,	Engineer & Bridge Builder, Utica, N. Y.

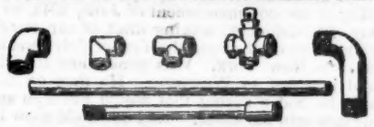
January 1, 1849.

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

PASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to ¼ in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T's, L's, and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by

MORRIS, TASKER & MORRIS.

Warehouse S. E. Corner of Third & Walnut Streets,

PHILADELPHIA.

To Railroad Companies, etc.

The undersigned has at last succeeded in constructing and securing by letters patent, a Spring Pad-lock which is secure, and cannot be knocked open with a stick, like other spring locks, and therefore particularly useful for locking Cars, and Swiiches, etc.

Companies that are in want of a good Pad-lock, can have open samples sent them that they may examine and judge for themselves, by sending their address to C. LIEBRICH,

46 South 8th St., Philadelphia.

November 3, 1849. 6m*

Mattewan Machine Works.

THE Mattewan Company have added to their Machine Works an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for *Locomotive Engines* of every size and pattern—also *Tenders, Wheels, Axles,* and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC., Of any required size or pattern, arranged for driving *Cotton, Woollen, or other Mills,* can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY, Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,

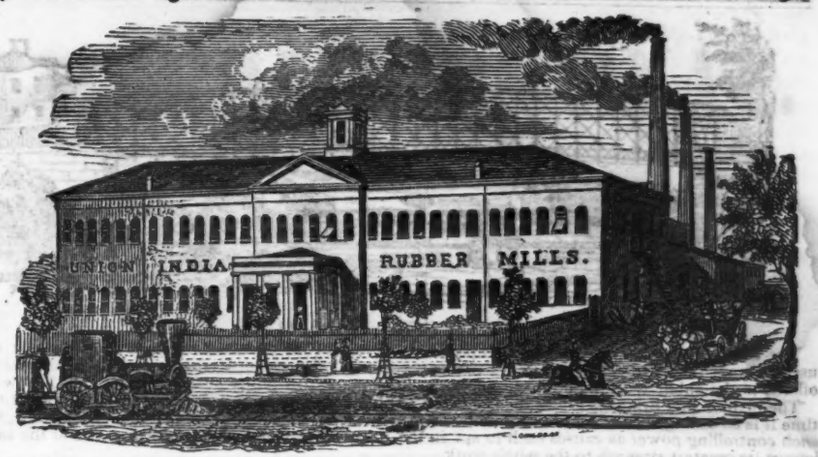
Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and *Drilling Machines,* of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fishkill Landing, or at 66 Beaver street, New York.

WM. B. LEONARD, *Agent.*

☞ HEAD QUARTERS FOR RUBBER GOODS. ☜



The Union India Rubber Company,

MANUFACTURERS AND DEALERS IN EVERY VARIETY OF

GOODYEAR'S PATENT METALLIC RUBBER FABRICS,

Which they offer on the most liberal terms at their Warehouse,

NO. 19 NASSAU STREET, NEW YORK.

Articles which this Company has the exclusive right to make comprise in part

Beds,	Overcoats,	Life Preservers,	Mail Bags,	Camp Blankets,
Pillows,	Leggins,	Boat Floats,	Breast Pumps,	Travelling Bags,
Cushions,	Syringes,	Souwesters,	Saddle Bags,	Wading Boots,
Caps,	Canteens,	Gun Cases,	Clothing of all kinds,	Horse Covers,
Tents,	Buoys,	Portable Boats,	Carriage Cloth, assor.	Piano Forte Covers,
Bottles,	Maps,	Horse Fenders,	Hospital Sheeting,	Railroad Gum,
Tubs,	Sheet Gum,	Water Tanks,	Mattrass Covers,	Hose, all kinds,
Caps,	Tarpaulins,	Army Goods,	Bathing Caps,	Shower Baths,
Pants,	Life Jackets,	Navy Goods,	Baptismal Pants,	Chest Expanders.

Together with *all new applications of the Patent Rubber,* which with Boots and Shoes, Packing, Machine Belting, Suspenders, Gloves and Mittins, Tobacco Wallets, Balls, Baby Jumpers, Elastic Bands, etc., etc., will be sold to the Trade at Factory prices.

*** All orders for special articles to be manufactured, should be accopanied with full descriptions and drawings.

October 20, 1849.

RAILROAD India-rubber Springs.

IF any Railroad Company or other party desires it, the NEW ENGLAND CAR COMPANY will furnish India-rubber Car Springs made in the form of washers, with metalic plates interposed between the layers, or in any other form in which they can be made; in all cases guaranteeing the right to use the same against any and all other pretended rights or claims whatsoever.

F. M. Ray, 98 Broadway, New York.
E. CRANE, 99 State Street, Boston.

1849.

Brown's Old Established SCALE WARE HOUSE,

NO. 234 WATER ST., NEW YORK.

THE Subscriber, Practical Manufacturer of Scales of every description, respectfully asks the attention of Railroad Companies to his Improved Wrought Iron Railroad Track and Depot Scales which for strength, durability, accuracy, convenience in weighing, and beauty of workmanship, are not surpassed by any others in this country.

He is aware that this is rather a bold assertion for him to make, yet he can say with confidence that they have but to be tried to give them precedence over all others. J. L. BROWN.

☞ Bank Scales made to order, and all Scales of his make Warranted in every particular.

References given if required. 4tf

THE NEWCASTLE MANUFACTURING Co. continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,
President of the Newcastle Manuf. Co.

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.

☞ *The above may be had at order at our Car Factory,*

REUEL DEAN,
ELIJAH PACKARD,
ISAAC MILLS,
} SPRINGFIELD, MASS.

1y48

Iron Safes.

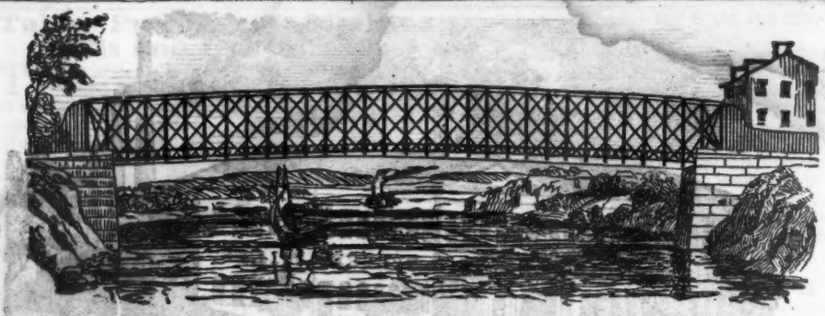
FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.

Each safe furnished with a thief-detector lock, of the best construction.

Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT
cor. Steuben and Water sts. Albany

August 24, 1848.



NEW YORK IRON BRIDGE COMPANY.

The Bridges manufactured by this Company having been fully tested on different Railroads, by constant use for more than two years, and found to answer the full expectations of their most sanguine friends, are offered to the public with the utmost confidence as to their great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time it is so arranged as to secure the combined principles of the *Arch*, *Suspension and Triangle*, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

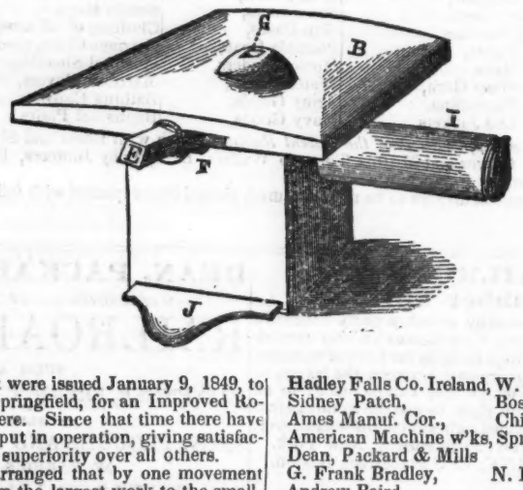
THE NEW YORK IRON BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, at short notice, and at moderate prices.

Models, and pamphlets giving full descriptions of the above BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 39 Jauncey Court, Wall st., or of W. RIDER & BROTHERS, 19 *Nassau Street*, where terms of contract will be made known, and where orders are solicited.

M. M. WHITE,
Agent for the Company.

August 29, 1849.

E. Harris' Patent Rotary Blacksmith Tuyere.



LETTERS Patent were issued January 9, 1849, to E. HARRIS, of Springfield, for an Improved Rotary Blacksmith Tuyere. Since that time there have been some hundreds put in operation, giving satisfaction and full proof of superiority over all others.

This Tuyere is so arranged that by one movement it can be changed from the largest work to the smallest; at the same time the fire is changed in proportion, thereby making a great saving in coal. Words cannot convey the full merits of this Tuyere; nor is it deemed necessary to speak in disparagement of other Tuyeres, as every smith is capable of judging for himself, and will give merit where merit is due.

I will simply say that there has not been a single instance where I have had my Tuyere put in use but it has given full satisfaction, and is recommended by all who have used them, as being superior to any other ever introduced. I would invite all to give them a trial; and the names of those using them being given, I hope it may induce others to try them, they recommend themselves.

Western Railroad Shop,	Springfield, Mass.
" "	Pittsfield, "
Connecticut val."	Springfield "
" "	N. Hampton "
Hartford "	Hartford, Conn.
New Haven "	New Haven "
Norwich and Worcester,	Norwich "
N. York and N. Haven,	New Haven "
Saratoga and Whitehall,	Saratoga, N. Y.
Vermont Central,	
Hudson and Berkshire,	Hudson,
L. Kingsley,	Canton, Mass.
Hadley Falls Co.	Ireland, W. Springfield, Mass.
Sidney Patch,	Boston, "
Ames Manuf. Cor.,	Chickopee, "
American Machine w'ks,	Springfield "
Dean, Packard & Mills	" "
G. Frank Bradley,	N. Haven, Conn.
Andrew Baird,	" "
Collis & Lawrence	" "
Slate & Brown,	Windsor Locks,
Gage,	Nashua, N. H.
Machine shop,	Manchester, "
Louis F. Lanney,	Baltimore, Md.
J. H. Baerdid,	179 Chambers st. N. Y.
J. Fanning	Rochester, "
G. W. Hunt	41 Gold st. "
Chamberlain & Waldo,	"
P. S. Burges, carriage maker,	"
Samuel Miller,	"
J. Leggett,	Steverson falls, "
J. E. Harris,	Hillsdale, "
John L. Graham,	Albany, "
David Dalsell,	South Egremont, Mass.
Roys & Wilcock,	Berlin, Conn.

Agents for the sale of Tuyeres:
B. B. Stevens in New York and Connecticut.
A. J. VanAllen has the Agency for the Western and Southern States, and is now travelling through those States. Any communication addressed to the patentee will receive prompt attention.

E. HARRIS, Patentee,
Springfield, Mass.

November 23, 1849.

Railroad Lanterns.

COPPER and Iron Lanterns for Railroad Engines, fitted with heavy silver plated Parabolic Reflectors of the most approved construction, and Solar Argand Lamps; manufactured by

HENRY N. HOOPER & CO.,
No. 24 Commercial St. Boston.

August, 16, 1849. 6m33

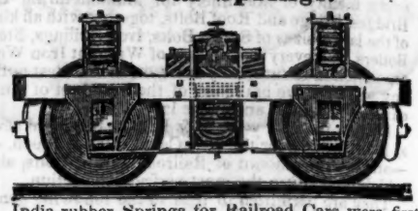
Gas Fixtures.

FIXTURES for Burning Gas for Lighting Public Buildings, Private Dwellings, Stores and Factories, manufactured by the subscriber in great variety. Orders by Mail, or left at the Factory on Causeway street, will be promptly attended to.

HENRY N. HOOPER & CO.

Boston, March 23, 1850. 6m13

F. M. Ray's Patent India-rubber Car Springs.



India-rubber Springs for Railroad Cars were first introduced into use, about two years since, by the inventor. The New England Car Company, now possesses the exclusive right to use, and apply them for this purpose in the United States. It is the only concern that has tested their value by actual experiment, and in all arguments in favor of them, drawn from experience of their use, are in those cases where they have been furnished by this company. It has furnished every spring in use upon the Boston and Worcester road, and, in fact, it has furnished all the springs ever used in this country, with one or two exceptions, where they have been furnished in violation of the rights of this company; and those using them have been legally proceeded against for their use, *as will invariably be done in every case of such violation.*

The Spring formed by alternate layers of India-rubber discs and metal plates, which Mr. Fuller claims to be his invention, was invented by Mr. Ray in 1844.—In proof of which we give the deposition of Osgood Bradley, of the firm of Bradley & Rice, of Worcester, Mass., car manufacturers, and men of the highest respectability. In this deposition, in relation to the right of parties to use these springs, he says:

"I have known Mr. Ray since 1835. In the last of May or the commencement of June, 1844, he was at my establishment, making draft of car trucks. He staid there until about the first of July, and left and went to New York. Was gone some 8 or 10 days, and returned to Worcester. He then on his return said he had a spring that would put iron and steel springs into the shade. Said he would show it to me in a day or two. He showed it to me some two or three days afterwards. It was a block of wood with a hole in it. In the hole he had three pieces of India-rubber, with iron washers between them, such as are used under the nuts of cars. Those were put on to a spindle running through them, which worked in the hole. The model now exhibited is similar to the one shown him by Ray. After the model had been put into a vice, witness said that he might as well make a spring of putty. Ray then said that he meant to use a different kind of rubber, and referred to the use of *Goodyear's Metallic Rubber*, and that a good spring would grow out of it." There are many other depositions to the same effect.

The history of the invention of these springs, together with these depositions, proving the priority of the invention of Mr. Ray, will be furnished to all interested at their office in New York.

This company is not confined to any particular form in the manufacture of their springs. They have applied them in various ways, and they warrant all they sell.

The above cut represents precisely the manner in which the springs were applied to the cars on the Boston and Worcester road, of which Mr. Hale, President of this road speaks, and to which Mr. Knevitt refers in his advertisement. Mr. Hale immediately corrected his mistake in the article quoted by Mr. Knevitt, as will be seen by the following from his paper of June 8, 1848. He says:

INDIA-RUBBER SPRINGS FOR RAILROAD CARS.—"In our paper yesterday, we called attention to what promises to be a very useful invention, consisting of the application of a manufacture of India-rubber to the construction of springs for railroad cars. Our object was to aid in making known to the public, what appeared to us the valuable properties of the invention, as they had been exhibited on trial, on one of the passenger cars of the Boston and Worcester railroad. As to the origin of the invention we had no particular knowledge, but we had been informed that it was the same which had been introduced in England, and which had been subsequently patented in this country; and, we were led to suppose that the manufacturers who have so successfully applied this material, in the case to which we referred had become possessed of the right to use that patent. It will be seen from the following communication, addressed to us by a member of the company, by which the Worcester railroad was supplied with the article upon which our remarks were based, that we were in an error, and that the springs here introduced are an American invention, as well as an American manufacture. How far the English invention may differ from it we have had no opportunity of judging."

AMERICAN RAILROAD JOURNAL.

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HENRY V. POOR, Editor.

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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & Co., 136 NASSAU ST.

Saturday, July 20, 1850.

Lake Champlain Bloomery Fires.

The accompanying plans of bloomery fires, as used in the Lake Champlain region of New York, are designed to complete the article upon the forges of this district, which was left unfinished on page 290 of the Journal.

The four first figures are sections in different directions through the most simple form of the bloomery. Figures 5, 6 and 7 are sections illustrating a similar fire supplied with the arrangement for reheating the blooms with the gases of the escape heat returned to the oven and mixed with a current of heated atmospheric air.

Fig. 1 is a front elevation of the common bloomery fire: the following letters designate its several parts and the apparatus connected with it.

a, a, a—Hot air pipes.

b—One of the two bed pipes.

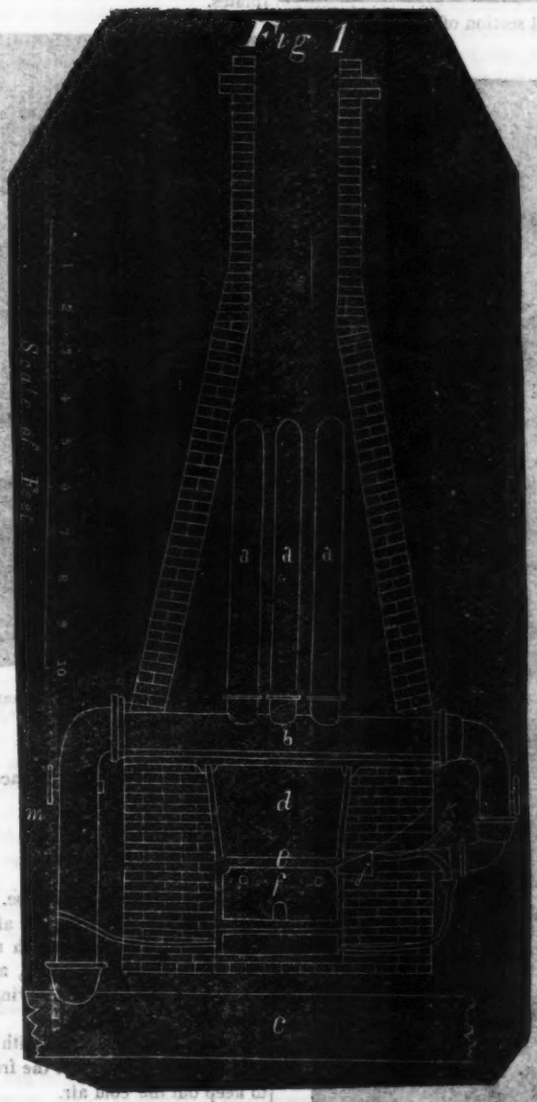
c—Main blast pipe from the blowing cylinders.

d—Back plate of the fire.

e—Fire plate.

f—Plate through which the cinder is drained off.

Fig 1



g—Bottom plate of the fire.

h—Water box placed under the fire.

i—A small pipe for letting the waste water out of the fire box.

j—Water twere.

k—Pipe for supplying cold water to the twere.

l—Valve for shutting off the hot air from the fire.

m—Throttle valve for regulating the supply of cold air to the hot blast pipes.

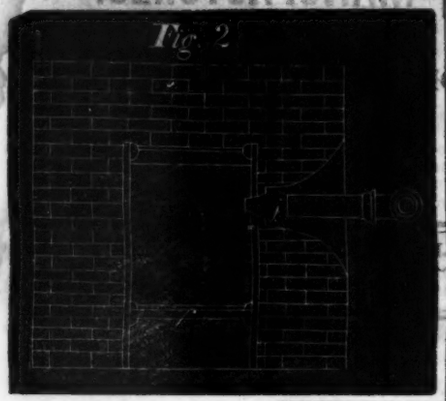


Fig. 2. Horizontal section of the same on the level of the twere.

Fig. 3. Side elevation of same. The letters correspond to those in fig. 1.

Fig. 4. Horizontal section on level of the bedplates.

Fig. 5. Side elevation of bloomery fire with oven for re-heating the blooms.

a—Bloomery fire.

b—Bottom of heating furnace on which the cold iron is charged.

c—Sand hearth.

d—Charging door.

e—Wind box.

f—Wrought iron blow pipe.

g—Pipe for conveying hot air to the wind chest.

h—Opening through which the hot air passes to feed the bloomery fire below, as seen in fig. 7.

i, i, i, i—Hot blast pipes lying horizontally in the chimney.

j—Cast iron door lined with fire brick; lets up and down, and can close the front of the fire, so as to keep out the cold air.

Fig. 6 is a horizontal section of the same on the level of the blow pipes and heating oven.

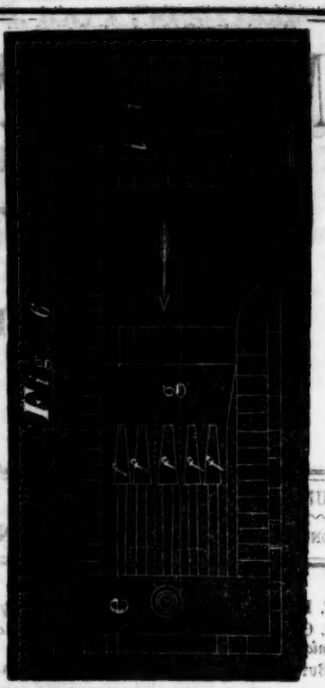
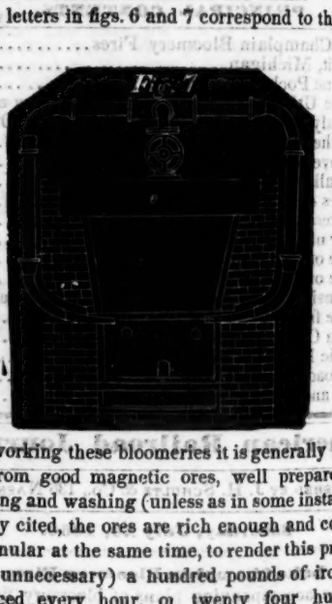


Fig. 7 is a front elevation of the same.

The letters in figs. 6 and 7 correspond to those of fig. 5.



In working these bloomeries it is generally found that from good magnetic ores, well prepared by crushing and washing (unless as in some instances, already cited, the ores are rich enough and coarsely granular at the same time, to render this preparation unnecessary) a hundred pounds of iron are produced every hour, or twenty four hundred pounds every twenty four hours. Two and a quarter tons of prepared ore are used, and about 240 bushels of charcoal to the ton of iron. This shows a considerable loss of ore in the process, much more than in smelting in a well conducted blast furnace; for this prepared ore must average not far from 65 per cent. of iron. It is found most economical to use the air for the blast at a temperature estimated at about 600°; the fire being properly burdened with ore, less charcoal is consumed to the ton of blooms, than when the blast is kept at a lower temperature.

The heating oven connected with some of the bloomery fires requires more than one of these to keep it at a sufficient temperature for re-heating the blooms. The fires are so arranged that two supply the escape gases to each oven. Small blow pipes are more effectual in causing a thorough mixture of the hot air and the gases, and consequently a more complete combustion, than large ones; but

the smaller the blow pipes the greater number must be employed. The pressure of the blast is estimated at from two to three pounds to the inch. H.

Correspondence of the Journal.

DETROIT, MICHIGAN.

Few cities in the United States show probably such marked evidences of prosperity and rapid increase as Detroit. Even after a short absence of six months one is surprised to find large blocks of brick buildings occupying the place of rows of wooden tenements, which have been removed or burnt down. In the main avenue alone, called Jefferson avenue, there are now building brick stores and houses, involving an investment of no less than $100,000. Such an amount goes a great way, where bricks are furnished, as they are here, for $2 75 a thousand. The cheapness and great abundance of all building materials, as brick, timber and lime, in connection with the remarkable position of this city on a perfect harbor of great extent immediately in the thoroughfare between the great lakes, insure to it a long continuance of increasing prosperity. On the one side are Lakes Erie and Ontario, on the other is the broad sea, Lake Huron, surrounded with its boundless forests of untouched timber. Beyond this, towards the south, Lake Michigan extends 300 miles, reaching the fertile fields of Illinois and southern Wisconsin; while towards the northwest, Lake Superior, the greatest of all fresh water seas, opens an avenue to perhaps the most extensive region of copper and iron ever yet explored. In the laying out of this great region and in the distribution of its resources, Nature has worked on a gigantic scale, and the design evidently contemplates gigantic results in the development by man of these resources. Much has already been done within a few years, even before the existence of the wealth stored beneath the surface was suspected. The discovery of this is hastening with accelerated speed the already rapid progress of improvement.

No place will be benefitted by this like Detroit. Its situation, which we have before alluded to, is along the northern bank of the Detroit river, which connects Lake St. Clair with Lake Erie, and which is here nearly a mile wide. The depth of water in the river is from 12 to 60 feet; the largest steamboats lie along side the piers, which extend up and down the river, and on which within a few feet of the water stand the warehouses. The freight depot of the Michigan Central railroad has a water front along its whole length of 800 feet, and discharges flour by sliding the barrels by their own gravity from the building directly down into the vessels lying opposite to it. Similar accommodations may be had at very little expense of preparation for six miles up and down the river. No harbor can be more secure against all winds; and at the same time less liable to sudden squalls, such as are frequent under high hills like those bordering the Hudson river. These picturesque objects are wanting to the scenery of this region, whose monotonous character of flatness is wearisome to eyes accustomed to bolder and more varied outlines.

In front of this long line of shore, so suitable for the construction of piers, hardly a third of which is yet occupied, and opposite as fine a natural site as can be found for a city of vast extent, pass all the vessels and steamboats engaged in the commerce through the green lakes. Here must pass all the products of the Lake Superior mines on their way to the eastern markets, and here will soon spring up extensive works, fed by the cheap mineral fuel of the neighboring coal fields of Ohio and Michigan, or the equally cheap charcoal from the forests of hard wood now standing in full sight around Lake St. Clair—for the conversion of the crude metals into the various refined articles such as are now furnished from the remote establishments of Old or New England. Steam engine factories, machine shops, foundries and steam saw mills are already in active operation, and the first step is already taken for the establishment of works for the refining and working up of the copper of the upper country. This must be followed, so soon as the forges now constructing in the iron region will insure a large supply of blooms, by rolling mills for the manufacture of bar and boiler plate iron of qualities far superior to those furnished by the argillacecous ores of Pennsylvania and Ohio.

Other works are also urgently required at this place, for which its own capital, invested to a great extent in real estate and in commerce, cannot well be employed. They are objects also not coming within the experience of those who feel the want of them; and which, therefore, they look to be supplied with from abroad. The most prominent perhaps among these is a *Dry-dock*; and the attention of those familiar with the construction of one and able to undertake it, may well be directed to the inducements offered by this locality. The first consideration is the number of vessels owned in and passing the place; and the second, the facilities already secured for taking these out of the water for repairs.

The following table, prepared from the custom house returns, as far as these furnished data, gives the number of steam and sail vessels that arrived at and departed from the port in 1849, also the number of steam and sail vessels that passed Detroit, ascending and descending, during the season of navigation (say seven months) in the same year.

Total Number of Vessels Arrived at Detroit in 1849.

	No.	Tonnage.
American vessels entered from Canada	147	10,906
American vessels cleared to Canada	155	11,470
British vessels cleared to Canada..	373	57,859
British vessels entered from Canada	378	63,006
American vessels entered from other American ports	1687	531,907
American vessels cleared to other American ports	1735	531,357
American steamers passing up	220	165,000
" " " down..	220	165,000
" propellers " up.....	220	83,000
" " " down..	220	83,000
" sail vessels " up....	1200	283,000
" " " down..	1200	283,000
Total	7755	2,267,505

The steam and sail vessels passing up and down are estimated from the returns of the collector, the numbers given being approximate only, but probably as nearly correct as they can be obtained. Besides those included in the above table are the arrivals and departures of vessels within the district, which are not reported at the custom house. These are not far from ten each day, at an average tonnage of 30 tons each. This would add about 2000 vessels and 60,000 tons.

Steamers owned in Detroit	52 of	18,034·25 tons.
Propellers "	5 of	1,180·46 "
Total	30	19,214·71 "
Tonnage of sail vessels owned at Detroit is		17,772·23 "

The only point on the entire chain of lakes where vessels of any size can be hauled out, [excepting Oswego on Lake Ontario, which is separated from the range of these vessels by Niagara Falls] is in the crooked, narrow, and closely packed harbor of Buffalo creek; and the only accommodation here is a rudely constructed railway, the best of which are not always safe for taking out large vessels.—Detroit, midway in the great route of the lakes, and largely engaged as it is in navigation, has not even this provision for the repairs of the shipping that frequents its harbor.

Some idea of the importance and probable profit of a dry dock may be obtained by reference to a single instance, showing the present cost of getting an examination even of the hull of a steamer.—The London, a boat of 375 tons burden, owned at this place, required a short time since such an examination and some slight repairs. She was taken to the railway at Buffalo, and hauled out; the necessary work was done, which did not require thirty hours' time, and the expense was $825.—Such instances are of almost daily occurrence: so that it would seem if a dry dock were built at this convenient and commodious harbor, it must secure constant and very profitable employment. Vessels wanting repairs would make it a point to have them done here; where all other facilities of repair and outfit are already provided.

An effort is likely soon to be made to accomplish this object; but capital for such undertakings, when their merits are fully appreciated is more likely to come from the eastern cities, than to be furnished here. The knowledge and the skill for constructing a work of this kind can only be had there. Information is now desired by parties at Detroit as to the mode and cost of construction, where timber of any dimensions can be afforded at the lowest rates, of a dock capable of taking a steamer of, say, 300 feet in length and measuring 1400 tons.

The population of Detroit is now calculated to be over 24,000. In 1843 it was 9,300—probable increase in seven years, 14,700. The present rate of increase is considerably greater than the average during the last seven years. The country around is a fertile agricultural district, connected with the city by the Michigan Central railroad, which traverses the entire State, through the "centre tier of counties," and the Pontiac railroad, completed and in operation 24 miles. There are also four plank roads building, one of which will be completed 30 miles, and the remaining three from 10 to 14 miles by the 1st of September next. It is contemplated to extend these roads from 40 to 60 miles into the interior. They lead directly into the richest and most populous counties of the State. By them every product of the farmer, as well as all kinds of timber and lumber, will be easily transported to the city at a trifling expense. Beside these means of communication with the interior, are bays, inlets and navigable streams leading from 40 to 50 and in some instances 100 miles into the country.—During the winter season, communication with the eastern States is greatly interrupted by the closing of the lakes. The nearest route to Buffalo is then through Lower Canada, the journey, which is now accomplished by the fine boats of the Michigan Central railroad company in 17 or 18 hours, then requiring about three days. Along the southern shore of Lake Erie it often takes six days. At the present rapid increase of population and internal improvements, it may reasonably be expected that the long desired railroad connection with Buffalo will be completed within a few years.

With such advantages of position and natural resources, the State of Michigan is certainly destined to take a high stand among the enterprising

and productive States of the Union. Its mineral resources, first brought to public attention by the lamented Dr. Houghton, have since been actively investigated under the patronage of the general government, and will no doubt be found ably treated of in the forthcoming report of Messrs. Whitney and Foster, for which we are looking with much interest. The results of our own investigations in the mining region of Lake Superior will continue to be reported in this Journal. H.

An Essay on Pen and Pocket Cutlery,

Embracing a Detailed Description of the Mechanical, Chemical, and Manual Operations Performed on Certain Raw Materials, to Convert them into the Means, Implements, and Materials, for Manufacturing Pen and Pocket Knives.

BY A. L. HOLLEY.

[Continued from page 403.

CHAPTER VII.—DESCRIPTION OF THE OPERATIONS PERFORMED BY THE ENGLISH CUTLER ON A FOUR BLADE, SHELL HANDLED, CONGRESS KNIFE.

Having spoken of the tools and materials, we will now describe the operations performed on the latter, to convert them into a four blade, shell handled, Congress knife. The scales are simply pairs of irregular strips of brass, with bolsters rivetted to the ends, around which there is a thin "fash"—as it is termed by Sheffielders, or "burr," as it is called in this country—or rough edge. The cutler sitting on a stool at his bench, with a short pair of shears first trims off this edge from all his scales, then holding them on the right edge of his steady, or anvil, which is convex, draws and bends them to fit the plate, with a hammer. This process is called "ratching."* The scales are next placed one by one with the plate, in the vice, and in a proper position, and the spring or middle hole made, and the inside of each bolster is marked for drilling through the holes in the plate, by a hand "parcer." This is sometimes called a fiddle bow drill, and consists of a rod of steel with a round point at one extremity, which rolls in the boss of a breast plate strapped round the cutler, and a hardened and tempered cutting part at the other end with flattened sides, commencing at a shoulder, from one-eighth to one-half an inch from its sharp, wedge-shaped point. A stick, as it is called, resembling a fiddle bow, having both ends of a small strap fastened to its either extremity, is moved backward and forward by the cutler's right hand. This strap passes round a roller fixed to the centre of said rod, and imparts a rotary motion to the drill, which cuts as it turns, both ways. The bolsters are then drilled in like manner, when a pair of scales are put, insides together, on either side of the plate, and a point, [or hardened and tempered steel wire from one to two inches long, snugly fitting the plate holes, and pointed at one extremity] is driven thro' both mark side bolsters, both ends of the plate, and the corresponding orifices in the opposite bolster, thus making the whole as a solid piece, when they are fastened in a vice, and the scale and bolster edges filed down to the plate by a coarse, then a fine file. Files are cut when soft by a hand chisel, and often by a machine, then hardened and tempered. The sides of the scales are next filed to remove the fash, the ends of the bolsters which the covering is to fit are filed till regular, then the points are driven out, the scales removed, and another pair passed through the same operation, till all fit the same plate and each other. With a drill of very small diameter, the cutler then makes an orifice in each scale end, equally distant from the edges and bolster, through which a rivet is to pass, and fasten down the covering. The scales are then "dished," which consists of striking them with the riveting end of the hammer on the outside, which renders that side slightly concave, and better prepared to fit the covering. The covering is now rough and crooked strips of tortoise shell, which the cutler holds singly over the blaze of a lamp, and as they are softened by the heat, he bends them till straight, which form they retain when cold again. The strips are now levelled by filing with a fine rasp, then matched, which consists of filing the end sufficiently, and to such a shape, that both will fit the bolsters, and set evenly to the scale, then drilled by passing the "parcet" through the small orifice in the scale end, and perforating the shell. To match the covering so closely to the scales and bolsters in every place that the point of the thinnest blade may not be placed between them, is a difficult and a very nice operation, and is generally performed on none but fine knives. The shell is scraped till smooth with a shaving knife on the inside, so that if the scale is transparent in any part, the substance under it may appear. A shaving knife is a blade, shaped like a razor, with the edge ground square, that each corner may describe a right angle. The handsomest shells are always placed on the mark side of the knife, and after all are matched with their respective scales they are rivetted to them. On each brass scale is laid a strip of either gold leaf, or Dutch metal, usually the latter, which is copper, brass and bronze leaf, or is sometimes composed of 25 parts gold, 4 silver and 7 copper. On this leaf is laid the shell, when the wire is passed through from the inside of the scale, and cut off with nippers or pliers. All are thus served, then riveted by filing the wire end smooth, and beating on a head with a light hammer. This is also a nice operation, as the scales and shell are to be drawn together by the rivet, and the covering must not be cracked, or checked, as is often the case, particularly with pearl, ivory and cocoa.

The metal scales and covering now together called scales, are put up in pairs with points, placed in a vice, the shell is filed down on the edges to the brass, and the middle or spring holes in the shell are drilled. The springs are then straightened and fitted to the plate with a hammer, placed with the plate in a proper position in the vice, marked for drilling by a short hand parcer, and then bored like the bolsters. The cutler next places them inside up in the vice, files the inside with both a coarse and fine half round file, fits the ends to a hardened spring of proper length, and then places them one by one between two plates in a vice, to which he files the backs. They are now leveled on the sides snugly with the aforesaid instrument on a block of wood in which is an upright metal point, fitting the spring hole, and keeping them stationary. The springs must be bent before tempering, else they might not have sufficient power to keep the blades open or shut. This is done either by striking their insides as their ends are elevated, or by fastening them between two plates, placing a point through the end plate holes over one end of the spring, and striking the other till bent sufficiently. A dozen or two of the backs are now fastened together by a wire passing round one end and thro' the middle holes, heated to a cherry red, or a little above, then immersed in cold water, when they are hard and brittle. They are tempered with oil, or better, with tallow, not by plunging them therein, but by covering them with a thin coat of it, and heating them over a slow fire till it is burned off. The cutler can usually ascertain by their appearance, and always by passing a file over them, the degree of hardness, and this is very necessary, for if too soft, they will not be sufficiently elastic to overcome the resistance of the blades, and will permit the latter to rattle and remain in any position in the handle. If the springs are too hard, they will either break on opening the blade (and nothing vexes a cutler more than to delay his work to fit new springs in place of broken ones), or shut the blades with such force as to break them, or if the blades are heavy, to strike their edges on the inside of the back, or to greatly endanger the nails of the person who opens the knife. Hence it is important that the springs should be well tempered, and if they are of the proper hardness, they are taken apart and straightened, as they are usually much bent by the heat. The insides, sides and ends are next glazed by holding them on wheels from 9 to 15 inches in diameter, and from 2 to 3 inches in width, which revolve from 600 to 800 times per minute, and are covered with leather, on the circumference of which is glued a coat of emery.—These glazers, with other wheels, are fastened by screws, so as to be easily removed, run on points, and are impelled by a strap which passes round a long drum in a cutler's frame.

This frame can be of any length, and is if single, from 2½ to 3 feet high and wide, and supports boxes for the points of the glazer shafts, and a shelf for the knife boards. Each cutler has a coarse glazer, as above described, and one or two fine glazers, which are made from the former, after its first coat has been partially worn off, by covering it with cake emery, a compound of the finest flour emery, tallow and beeswax, and which renders the steel very smooth, though not bright. Emery, from Emeri, in the island of Naxos, is a variety of corundum, very compact, generally opaque, and excessively hard, and capable of scratching, and wearing gradually away, anything except diamonds. It has no determinate form, but is amorphous, and used when pulverized. Corundum is composed of nearly pure alumina, and is of a red color, and is allied to sapphire. Glazers, when worn out, are dressed, by soaking and scraping off the old glue, and putting on a new coat of emery. The blades, as left by the grinder, are now taken, marked by a hardened fitting tang, and drilled like the springs. An upright metal point, protruding from the mark side of another, or the same fitting tang, is placed in the orifice in the blade tang, both together are screwed into the vice, and with files the blade is reduced to the pattern. The blades are squared, or in the language of a Sheffield cutler, "*sqworn*" by this operation. Strips of sheet brass, the shape of the knife, are now cut out, drilled and filed down between two plates for middle scales, which with the blades, springs and scales, are put up in hafts, in the following order:

To be continued.

* This work is perhaps a corruption of retching, or wrenching, and like many other Sheffield words, is found in no dictionary of any language.

On the Utility of a Knowledge of Assaying and Analysis in the Treatment of Metallic Ores in the Smelting Process.

Nothing more clearly proves the want of knowledge of our forefathers in metallurgical and chemical operations, and their ignorance of the constituents of the minerals from which they produced

their metallic results, than the refuse of their operations in the form of slags or scoria, and the remains of the rudely constructed furnaces they used, and it is only within the present century that works of this nature seem to have been conducted on any thing like scientific principles. It is true that where there is abundance of material there is too often waste, and this may in some measure account for the richness in metal of some of the slags; but it is evident that had the former operators been properly informed in their business, they would have extracted the full produce of their minerals. From the enormous quantity of slags in various parts of the kingdom in the lead districts, it is evident that they could not have properly prepared the ore for smelting, as if the ore was dressed to a high produce, there could have been but little scoria formed, while on the Mendip hills we find these slags existing in some places to a depth of thirty feet, and covering an area of ground reaching more than a mile in length, and nearly the whole breadth of the valley, and by assay containing from 15 to 45 per cent of metallic lead. Had assaying been understood at the time these ores were worked, it is evident that the ancients would have found some of their refuse to contain more lead than some parcels of ores which they subjected to their rough smelting process. The same observations might also be made respecting the sharp slags of the iron-works, and even of late date the metallic contents of the copper slags. But let us see under the different heads how far the knowledge of assaying and analysis is useful. I would say in regard to the former, that the books of every well regulated smelting establishment should prove its utility by showing that the produce, within certain limits, should correspond to the amount calculated by assay from the bulk of mineral operated upon. This is considering assaying as only giving the quantity of one or two metals, as lead and silver in a given weight; but should it be proved that such gross produce is not (as before said, within certain limits) equal to the assay in working on a large scale, it is evident there is some cause for it, and the only remedy to improve the process, is a knowledge of the constituent parts of the mineral or scoria, formed by analysis, as the manner of treating metallic ores depends upon the state of mineralization of the metallic contents, and the description of its earthy matter.

Metals in a state of oxide are very liable to combine with the earthy gangue in a state of fusion, as is shown in the article of glass, one sort of which may contain from 15 to 20 per cent. of lead, and yet remain clear, in fact its transparency improved, and therefore not detectable except by analysis; and the various colors given to glasses are from proportions of metallic oxides in a state of vitrification, with the silica and other compounds. Thus, then, by the knowledge of metal existing in a state of oxide we know that a proportion of carbon is requisite to produce it in a metallic state. Where sulphur is by analysis proved to exist, it shows the necessity of adding some substance in the reduction (as lime or iron,) which has a nearer affinity for the sulphur than the metal to be reduced; when arsenic is present, the necessity of calcination previous to reduction of the other metal (as tin, &c.,) in order to prevent injuring its quality; and in fact the whole list of metals might be gone through to show what effect would be produced in the smelting process by a want of knowledge of the other metallic constituents, and the state of mineralization in which they exist, and this only can be ascertained by analysis; but, above all, in order to produce the largest proportion of metal in the smelting process, it is requisite to know the proportion of the different earthy constituents of the ores, as on this depends the admixture of other earths, so as to produce a slag at once readily fusible, and in such proportions as to form a perfect vitrifiable scorih, without the combination of any metallic oxide; or if they do contain any, only such as are not required to be reduced to a metallic state. Thus it will be seen that a knowledge of analysing these scorias will be of two-fold advantage:—First, to see what metallic oxides they may contain, and the proportions; and secondly, whether the proportion of earthy matter is in such quantity as to form the silicates, with other compounds without the metal required to be reduced.

From the London Artizan.

Improvements in Iron Manufacture.

Sir F. C. Knowles has recently patented an improved method of making iron direct from the ore, which appears to be based on sound chemical principles. The patentee states that the method was suggested to him by a consideration of the fact that coal, in the process of coking, whether in coke ovens, or in the blast furnace, as raw coals, loses a large portion of its weight in the form of gaseous matter, composed chiefly of carbon and hydrogen, and by considering the well known superior deoxidizing and cementing power of these elements in the aeriform state, as compared with their solid and crude condition in coke or bituminous coal. This loss is increased by the action of the blast on the materials in the lower parts of the blast furnace, which has been computed at upwards of eighty per cent. of the entire weight where raw coal is used. In addition to this, only the poor earthy ores have been used, while the nearly pure ores have been neglected; and we import foreign iron for the purpose of conversion into steel.

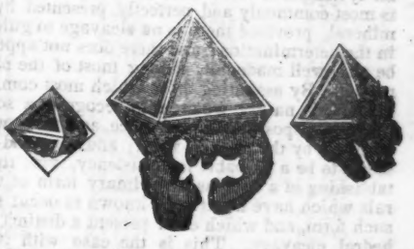
For the first process—that of making the iron direct from the ore, without any previous smelting—the patentee selects those ores most free from earthy matter, and the nearer they approach to pure oxides the better. For another process—the preparing ores by cementation in retorts, to make cast iron, by smelting afterwards—the ores are taken indifferently, excepting such as contain much sulphur and arsenic. They are first broken into pieces of moderate size, so as, when placed together in a heap, there may be interstices between them capable of admitting gas or vapor through them without obstruction. They are then placed in retorts, rendered gas-tight, and brought up to a red heat, each of which is connected with gas tubes, having stop cocks for the purpose of injecting and regulating a current of gas among the ore. For this purpose two sorts of gases are used by the patentee—common carburetted hydrogen, or coal gas, and carbonic oxide, prepared by slow combustion of charcoal or coke. The patentee does not confine himself to coal gas, but employs any hydrocarbon which can be produced economically.—When the retorts are charged, the gas generated, the *rationale* of the process will be as follows:—The ore being mainly an oxide, the hydrogen of the hydro-carbon unites with the oxygen of the ore to form water, while the carbon unites with another portion of oxygen, forming carbonic oxide or carbonic acid, as the case may be, leaving metallic iron as the result. The ore being so far reduced, the next stage of the process, when malleable iron is the proposed product, is to shut off the gas on both sides of the retorts, and transfer the contents of the retorts to the puddling furnace, where the iron is treated in the common way. It may be cut, piled, re-heated, and rolled as usual, according to the nature of its distinc[illegible] or quality required. If steel be required, th[illegible]tation must be carried further, until [illegible] metal has absorbed about 1 per cent. The reduced and cemented ore is then put into crucibles, or melting pots, to be run down into ingots in wind furnaces, as is now done in the making of cast steel. If the earthy matter in the ore require it, some proper flux is to be added; according to the usual method of fluxing iron ores. If cast iron be required, the cementation must be carried on until about 3 or 4 per cent. of carbon is absorbed, after which it is transferred to the blast furnace, with a proper flux. The patentee further claims, where cast iron or steel is the product required, the separate cementation of iron ores with charcoal, coke dust, anthracite coal, coke, &c., on the following iron ores:—Pure specular ore, red and brown hematite, black oxide, red and brown ochreous ores, magnetic iron ores, spathose ores, being carbonates of protoxide of iron, and different from the argillaceous iron ores of the carboniferous series of rocks above the mountain limestone. Lastly, the patentee claims the use of spathose iron ores and "soft mine" as a flux, to supersede the use of limestone; the ore is first roasted, to drive out the carbonic acid, and then mixed with other ores in such proportion that the lime contained in the aggregate may bear a due proportion to the silica and alumina in the other iron ores to be smelted.

Crystallized Gold from California.

BY FRANCIS ALGER, BOSTON.

[*Read in part, before the Boston Society of Natural History, April*, 1850.]

I have lately had an opportunity of examining some parcels of California gold, which have afforded specimens worthy of especial notice. Those which I purpose to describe in this paper, I obtained from the collections brought home by Mr. Geo. E. Tyler, of this city, and Mr. H. B. Platt, of New York. They consist of well characterised octahedral crystals, simple and modified, the surfaces of which have been but slightly disfigured by attrition, or the effects of transported action usually observed in other specimens. I cannot say that I have ever before seen what was unquestionably a genuine crystal from this new land of gold; an irregular crystalline plane could only occasionally be traced out in former specimens; but here we have examples of crystallization, as perfect among the small ones especially, as are to be seen in magnetic iron ore or in spinelle. The most striking examples on a large scale, are octahedrons of the dimensions of the accompanying figures. They are isolated crystals, and the smallest one, which



is the most perfect, is so entirely free from any adhering portion of the matrix to which it must have been attached, as to lead me to believe that this matrix was a much softer material than the quartz in connection with which the gold is usually found. Although its exact locality is not known, it is probable, as indicated by its slightly worn appearance, that it has been but recently dislodged from its original resting place. This crystal presents four pretty regular faces, and has three of its solid angles perfectly formed to a point. It exhibits no modifications; but two of its faces are depressed—one of them by a very deep cavity which extends not quite to the edges of the plane, but so near to them as to leave a narrow ridge or border, all around the cavity and parallel with the edges, thus giving the same triangular outline to each. It appears as if the crystal had been in a liquid state, and that soon after the outside had congealed, the inner portion, or a part of it, had run out, leaving the surrounding consolidated edge just referred to. I have seen something similar to this formed among artificial crystals, as for instance, metallic lead (which takes the form of an octahedron) and lead ore partially desulphurized, when the metal was allowed to flow off slowly, just as the outer crust had formed over the surface of the crystals.

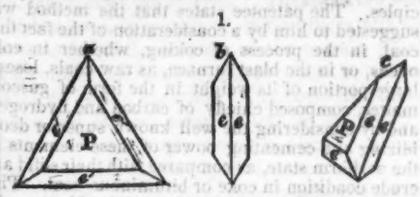
The large crystal presents only one half of the octahedron, its base blending with the massive gold, or only indicating the incipient planes of the lower pyramid. Three of its planes are perfectly smooth surfaces, excepting along their edges, which are prominently marked by the same projecting border or ridge already described on the smaller crystal. This border may have been produced in the same manner by the shrinking away of the metal, or it may be the result of that kind of crystallization which is dependant on a greater intensity of molecular attraction in one direction, or axis, than another. It would seem in this case, as if the molecules arrived at the points of contact along the edges of the crystal, faster than they could be appropriated, and thus they have accumulated in these little ridges. This peculiarity is not confined to the large crystals, for it is observed even among the smallest; but it is confined to the unmodified octahedrons. In a few crystals, there is a double series of these ridges, the inner one representing, apparently, the commencement of another crystalline face within the cavity of the larger one. This is beautifully shown in the third figure on the

last page, also answering to the natural size of the crystal.*

The great size of these crystals, and the fact that some of the cavities contained portions of oxyde of iron probably produced by the decomposition of pyrites, have led some to regard them as pseudomorphs of sulphuret of iron. I am not disposed to ascribe any such forced and unnatural origin to these beautiful productions. I believe them to have been formed under the ordinary circumstances of crystallization, either in an open space, or while surrounded by a matrix so soft and accommodating, as to allow them full freedom to take the form it was intended they should take. Were the crystals cubes, there might be some reason for regarding them in the light of pseudomorphs of iron pyrites, because this is the most common form of pyrites, and, moreover, all the pyrites that I have seen from California, has been in that form. But, we may ask, who has ever seen even a cubic pseudomorph of gold? Crystals of gold are rare, cubes particularly so, and yet this form, on account of its simplicity, is made the primary form; where as it would seem as reasonable in cases of the regular system, to select that form as the primary which is most commonly and perfectly presented by the mineral, provided there is no cleavage to guide us in the determination; and there does not appear to be any, well made out, among most of the native metals. By assuming those which most commonly occur in nature, we seem to recognise a sort of inherent disposition, a preference, as it were, which is shown by the mineral itself; and we avoid what seems to be a palpable inconsistency, viz: the establishing of a cube as the primary form of minerals which have never been known to occur under such form, and which even present a distinct octahedral cleavage. This is the case with two at least. If we take the simplest form, the cube should be made the primary of native iron, copper, lead, silver, and mercury; and so of some others, which occur in octahedrons and are not determined by any certain cleavage. In the case of copper, some authors have made the cube its primary.† Hauy (Traite, 1808) even expressed his doubts as to the existence of cube gold, while he cites examples of the octahedron; and Beudant, (Min., 1832) says they are very rare.‡ Mohs implies the contrary, for he says (Min. Ed. by Haidinger) they are often hollow, while the octahedrons are smooth. Cleaveland describes the crystals in general as small and imperfect, and Nicol, in his late work, in the like manner, observes, "they are small and very small." I hope we may yet say of our California gold crystals, they are large and very large, as much for the benefit of mineralogists, as a reward to the industry and hard toil of the diggers.

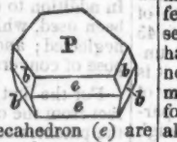
Crystals of Rare Modifications.—Among the specimens collected by Mr. Tyler, I have found several rare modifications of this metal, such as come to us in their most perfect form from Brazil. I here give figures of two of them. One, fig. 1, (*abc*)

1.



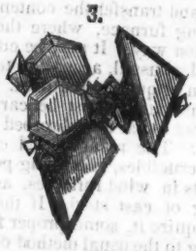
represents a compound form produced by the union of two opposite sections, or segments, of an emarginated octahedron; a form not unfrequently presented by octahedral spinelle. The other, fig. 2, has the apparent form of irregular six sided tables, with truncated edges, and is a modification of the same form. They are tolerably well represented by the figures referred to, but the planes of the dodecahedron (*e*) are less conspicuously defined on the real crystals, owing to their extreme thinness, and their edges being rounded off, or otherwise disfigured. For this reason, we can distinguish but two of the primary octahedral planes on any of these crystals. Crystals somewhat resembling fig. 2, have been brought from Brazil and Siberia; they had the same flattened form of six-sided tables, but they are the result of a different kind of modification, and are not macles. Dufrenoy and Levy* have each given a figure of a very perfect example of the modification here referred to (*triforme* of Hauy) derived from the cube, octahedron and dodecahedron; and I was at first, inclined to regard my crystals as the same, only more deeply truncated on the solid angles *a*, as lettered by Dufreynoy. Further examination however, proved them to be the same mackled combination as fig. 1, with the additional replacements indicated by the letters *b*, which have changed the triangular faces P, and the whole crystal, into a hexagonal figure as above represented. These new planes are sometimes unequally extended, and roughened by inequalities, while the primary faces P, are perfectly smooth and brilliant.†

2.



Some of the unmodified macles, as shown in different positions by fig. 1, *a*, *b*, *c*, are very distinctly formed, the edges between *e e*, uniting the two segments of the octahedron, being well defined. This

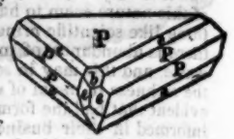
3.



4.

is the most strikingly shown on the largest of these crystal, the lowest one of the group represented by fig. 3.‡ Owing to its position, it is only partially visible in the group as here drawn, and fig. 4 is intended to show it as it appears on the opposite side of the specimen in juxtaposition with two other crystals, one a very beautiful and smooth planed octahedron with emarginated edges. Dufrenoy has described a macle of gold quite similar to fig. 1, and it may be seen figured in the volume of elegant and copious crystallographic illustrations which accompany his treatise.§ It came from the Matto-Grosso, in Brazil, and is in the collection of the of the School of Mines, Paris. It differs from the example here described,

5.



in exhibiting more of the planes of the octahedron and dodecahedron. Fig. 5 is a copy of his figure, but regarding the octahedron as the primary form of gold, I have, besides conforming his lettering to the notation of Phillips, made primary planes of those which he gives only as secondaries of the cube.

It should be observed that as nearly all these crystals show the effects of more or less abraded action, it is often difficult to distinguish planes confined within such narrow limits, and which are too small or too rough to admit of accurate measurement. We can hardly expect to see many perfect crystals from California, until the rocks themselves are systematically explored, from whence have proceeded the millions of fragments that are now scattered over the plains and valleys. We may, from the indications already afforded, look for crystals of gigantic dimensions, and possessing all their native unaltered beauty.

Boston, May 17, 1850.

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* The two large crystals above described were obtained from the very choice and beautiful collection of specimens, made with great care, and at no small expense, by Mr. Platt. This gentleman, during a most prosperous residence of two years in San Francisco, and while occupying a situation which brought him into daily and almost hourly contact with persons returning from the mines, has evinced his good taste by purchasing the most interesting specimens obtained by them. He has consequently been rewarded by the finest amateur collection hitherto brought from California. It comprises a great variety of ramified, arborescent, dendritic and other imitative forms, here and there showing crystalline faces, all of them being sometimes most fantastically joined together in the same specimen. He informs me that in obtaining this collection, he had examined gold to the amount of more than four millions of dollars.

† They differ in regard to silver and iron, some adopting the cube, and others the octahedron, as the primary.

‡ Cronstedt, in his Mineralogy, says, "I have procured in Transylvania a specimen of cube native gold, but I have never seen it any where else." In Levy's enumeration of the splendid Turner collection formed by Henry Heuland, eight examples are given of the regular octahedron, and only two of the cube, one of these being from the very locality Cronstedt speaks of.

* Fig. 576, plate 144, of Dufrenoy's, and fig. 3, plate 47, of Levy's Atlas of Plates.

† In the Turner collection there is a single macle crystal answering almost exactly to fig. 2, and Levy has figured it in his Atlas, plate 47, fig. 4.

‡ This groupe represents the figures as magnified to about twice their natural size.

§ Atlas, plate 145, fig 581.

TABLE OF SPECIFIC GRAVITY.

Metals.

	Weight, water being 1000.	Number of cubic in. in a lb.	Weight of cubic in. in lbs.
Platina	19500	1·417	·7053
Pure gold	19258	1·435	·6965
Mercury	13560	2·038	·4904
Lead	11352	2·435	·4105
Pure silver	10474	2·638	·3788
Bismuth	9823	2·814	·3552
Copper, cast	8788	3·146	·3178
" sheet	8910	3·103	·3225
Brass, cast	7824	3·533	·3036
" sheet	8396	3·293	·3037
Iron, cast	7264	3·806	·263
" bar	7700	3·592	·279
Steel, soft	7833	3·530	·2833
" hard	7816	3·537	·2827
Tin, cast	7291	3·790	·2636
Zinc, cast	7190	3·845	·26

Stones, Earth, &c.

	Weight, water being 1000	Weight of a cubic foot in lbs.	Number of cubic feet in a ton.
Marble, average	2720	170·00	13
Granite, ditto	2651	165·68	13½
Purbeck stone	2601	162·56	13¾
Portland ditto	2570	160·62	14
Bristol ditto	2554	159·62	14
Mill stone	2484	155·25	14½
Paving stone	2415	150·93	14¾
Craigleith ditto	2362	147·62	15
Grindstone	2143	133·93	16¾
Chalk, British	2731	173·81	12¾
Brick	2000	125·00	17
Coal, Scotch	1300	81·15	27½
" Newcastle	1270	79·37	28½
" Staffordsh'e	1240	77·50	29
" Cannel	1238	77·37	29

EXPANSION of SOLIDS by increasing the Temperature from 32° to 212°, the Length of the Bar at 32° being 1·0000000.

Glass tube	1·00082800
Platium	1·00088420
Antimony	1·00108300
Cast iron	1·00111111
Steel	1·00118999
Blistered steel	1·00112500
Steel hardened	1·00122500
Bismuth	1·00139200
Silver	1·00189000
Tin	1·00217298
Gold	1·00150000
Lead	1·00286700
Brass	1·00186671
Wrought iron	1·00125800
Zinc	1·00294200
Spelter solder, brass 2, zinc 1	1·00305800
Soft solder, lead 2, tin 1	1·00250800
Copper 8, tin 1	1·00181700
Palladium	1·00100000

PROGRESSIVE DILATATION OF METALS BY HEAT, the Length at 62° Fahrenheit being 1000000.

	At 212° Fahr.	At 662° Fahr.	Fusing Point.
Platinum	1000735	1002995	1009926
Iron, wrought	1000984	1004483	1018378
Iron, cast	1000893	1003943	1016389
Gold	1001025	1004238	
Copper	1001430	1006347	1024376
Silver	1001626	1006886	1020640
Zinc	1002480	1008527	1012621
Lead	1002323		1009072
Tin	1001472		1003798

POWER OF METALS FOR CONDUCTING HEAT.

Gold	1000	Platinum	381	Tin		303·9
Silver	973	Iron	374·3	Lead		179·6
Copper	898·2	Zinc	363			

EFFECT OF HEAT ON DIFFERENT METALS.

	Fahr. Deg.	Wedg. Deg.
Extreme of Wedgewood's Scale	32277	240
Platinum melts	23177	170
Wrought iron fuses	21637	158
Cast iron melts	17977	130
Wielding heat of bar iron	13420	94
Fine gold melts	5237	32
Fine silver melts	4717	28
Copper melts	4587	27
Brass melts	3807	21
Iron red hot in daylight	1207	1
Lead melts	612	
Mercury boils	600	
Bismuth melts	476	
Tin 1, Lead 4 melts	460	
Tin melts	442	
Tin 3, and lead 2, or tin 2, and bismuth 1, melts	334	
Tin and bismuth, equal parts, melts	283	
Bismuth 5, tin 3, and lead 2, melts.	212	

ORDERS OF METALS OF DUCTILITY.

Wire-drawing Ductility.	Laminable Ductility.
Gold; silver; Platinum; iron, wrought; Copper; zinc; tin; lead.	Gold; silver; copper; tin; platinum; lead; zinc; iron, wrought.

WEIGHT OF A LINEAL FOOT OF FLAT BAR IRON in lbs.

Breadth in inches.	Thickness in parts of an Inch. ¼	5-16	⅜	7-16	½
1	·835	1·044	1·253	1·461	1·670
1¼	·939	1·174	1.409	1·644	1·878
1½	1·044	1·305	1·566	1·826	2·088
1¾	1·148	1·435	1·722	2·009	2·296
2	1·252	1·566	1·879	2·192	2·504
2¼	1·358	1·696	2·035	2·374	2·716
2½	1·462	1·827	2·192	2·557	2·924
2¾	1·566	1·957	2·348	2·740	3·132
3	1·671	2·088	2·505	2·922	3·342
3¼	1·775	2·218	2·662	3·105	3·550
3½	1·880	2·348	2·818	3·288	3·760
3¾	1·984	2·479	5·975	3·470	3·968
4	2·088	2·609	3·131	3·653	4·176
4¼	2·193	2·740	3·288	3·836	4·386
4½	2·297	2·870	3·444	4·018	4·594
4¾	2·402	3·001	3·601	4·201	4·804
5	2·506	3·131	3·758	4·383	5·012

Breadth in inches.	Thickness, in parts of an Inch. ¾	⅞	1
1	2·088	2·506	2·923	3·340
1¼	2·348	2·818	3·287	3·756
1½	2·609	3·132	3·653	4·176
1¾	2·870	3·444	4·018	4·592
2	3·131	3·758	4·384	5·008
2¼	3·392	4·070	4·749	5·432
2½	3·653	4·384	5·114	5·848
2¾	3·914	4·696	5·479	6·264
3	4·175	5·010	5·845	6·684
3¼	4·435	5·324	6·210	7·100
3½	4·696	5·636	6·575	7·520
3¾	4·957	5·950	6·941	7·936
4	5·218	6·262	7·306	8·352
4¼	5·479	6·576	7·671	8·772
4½	5·740	6·888	8·036	9·188
4¾	6·001	7·202	8·402	9·608
5	6·262	7·516	8·767	10·024

EXPANSION AND DENSITY OF WATER at various Degrees of Temperature

Sp. Gr.	Bulk of Water.	Maximum Density 39°. Deg.
1·00000	1·00000	38
0·99999	1·00001	37
0·99998	1·00002	36
0·99996	1·00004	35
0·99994	1·00006	34
0·99991	1·00008	33
0·99988	1·00012	33
1·00000	1·00000	40
0·99999	1·00001	41
0·99998	1·00002	42
0·99996	1·00004	43
0·99994	1 00006	44
0·99991	1·00008	45
0·99988	1·00012	46

Note.—The expansion of water is the same for any number of degrees above or below the maximum of density; but the law of maximum of density does not prevail in the case of sea water; but, on the contrary, is found gradually to increase in weight down to the freezing point.

TABLE of the WEIGHT of TIN PLATES as manufactured in England.

	Brand mark.	No. sheets per box.	Length and breadth. In.	In.	Weight per box. cwt	qr	lb
One Box of	IC or 1 Com	225	13¾ by	10	1	0	0
	2 C	225	13¾ by	9¾	0	3	21
	3 C	225	12¾ by	9¾	0	3	14
	HC	225	13¾ by	10	1	0	7
	HX	225	13¾ by	10	1	1	7
	IX	225	13¾ by	10	1	1	0
	2 X	225	13¾ by	9¾	1	0	21
	3 X	225	12¾ by	9¾	1	0	14
	1 XX	225	13¾ by	10	1	1	21
	1 XXX	225	13¾ by	10	1	2	14
	1 XXXX	225	13¾ by	10	1	3	7
	DC	100	16¾ by	12¾	0	3	21
	DX	100	16¾ by	12¾	1	0	14
	DXX	100	16¾ by	12¾	1	1	7
	DXXX	100	16¾ by	12¾	1	2	0
	DXXXX	100	16¾ by	12¾	1	2	21
	SDC	200	15 by	11	1	2	0
	SDX	200	15 by	11	1	2	21
	SDXX	200	15 by	11	1	3	14
	SDXXX	200	15 by	11	2	0	7
	SDXXXX	200	15 by	11	2	1	0
	Wasters or Wc and X mixed	225	13¾ by	11	1	0	14
	TT	450	13¾ by	10	1	0	0
	XTT	450	13¾ by	10	1	0	14

TABLE OF THE AREAS OF CYLINDERS.

Diameter of cylinder.	Area of cylinder.	Diameter of cylinder	Areas of cylinder.
9	63·58	12½	122·65
10	78·5	13	132·66
10½	86·56	13½	143·02
11	95·01	14	153·96
11½	103·84	14½	165·04
12	113·07	15	176·62

Note.—The areas of cylinders are as the squares of their diameters.

The diameter of a circle being 1, its circumference equals 3·1416.

The square of the diameter of a circle being 1, its area equals ·7854.

The circumference of a cylinder, multiplied by its length or height equals its convex surface.

The area of the end of a cylinder, multiplied by its length, equals its solid contents.

The area of the internal diameter of a cylinder, multiplied by its depth, equals its cubical capacity.

The square of the diameter of a cylinder multiplied by its length and divided by any other required length, the square root of the quotent equals the diameter of the other cylinder of equal contents or capacity.

The capacity of a cylinder 1 foot in diameter and 1 foot in length, equals 4·895 imperial gallons.

The capacity of a cylinder, 1 inch in diameter and 1 foot in length, equals ·034 of an imperial gallon.

The capacity of a cylinder, 1 inch in diameter and 1 inch in length, equals ·002832 of an imperial gallon.

The capacity of any cylinder in imperial gallons is obtained by multiplying the square of its diameter by its length, or the capacity of any other sphere by the cube of its diameter, and by the number of imperial gallons contained as above in the unity of its measurement.

WEIGHT OF A LINEAL FOOT OF SQUARE AND ROUND BAR IRON.

Side and diameter in inches.	Square, in lbs.	Number of lineal feet in 1 cwt.	Round, in lbs.	Number lineal ft. in 1 cwt.
¼	·209	536	·164	683
5-15	·326	343¼	·256	437¼
⅜	·470	238	·369	303¼
7-16	·640	175	·503	294¼
½	·835	134	·656	170¾
9-16	1·057	106	·831	134¾
⅝	1·305	86	1·025	109¼
11-16	1·579	71	1·241	90¼
¾	1·879	59½	1·476	76
13-16	2·205	51	1·732	64¼
⅞	2·558	44	2·011	55¼
15-16	2·936	38	2·306	48¼
1	3·340	33½	2·624	42¼
1¼	4·228	26½	3·321	33¾
1¼	5·219	21½	4·099	27¼
1⅜	6·315	17¾	4·961	22½
1½	7·516	15	5·913	19
1⅝	8·820	12¾	6·928	16¼
1¾	10·229	11	8·043	14
1⅞	11·743	9¼	9·224	12¼
2	13·360	7¾	10·496	10¼
2¼	15·083	7¼	11·846	6¾
2¼	16·709	6¾	13·283	8¼
2⅜	18·840	6	14·797	7¼
2½	20·875	4¾	16·396	6¾
2¾	23·115	5	18·146	6¼
3¼	25·259	4¼	19·842	5¼
3¼	27·608	4	21·684	5¼
3	30·070	3¾	23·653	4¾
3¼	32·618	3½	25·620	4¼
3½	35·279	3	27·709	4
3¾	38·045	3	29·881	3¾
3¾	40·916	2¾	32·170	3¾
3¾	43·890	2¾	34·472	3¼
3¾	46·969	2¼	36·895	3
3¾	50·153	2¼	39·390	2¾
4	53·440	2	41·984	2¼
4¼	56·833	2	44·637	2¼
4¼	60·329	1¾	47·385	2¼
4¼	63·930	1¾	50·211	2¼
4¼	67·637	1¾	53·132	2¼
4¾	71·445	1¾	56·113	2
4¾	75·359	1¾	59·187	1¾
4¾	79·378	1¾	62·344	1¾
5	83·510	1¾	65·585	1¾
5¼	92·459	1¾	72·618	1¾
5¼	101·036	1¾	79·370	1¾
5¾	110·429	1	86·731	1¾
6	120·243		94·610	1¾

Note.—The weight of bar iron being 1;

The weight of cast iron	=	·95
" steel	=	1·02
" copper	=	1·16
" brass	=	1·09
" lead	=	1·48

TABLE of the Proportions of Heating Surface and Area of Fire-Grate compared with the quantity of water evaporated, and of fuel consumed, in the Cornish and Boulton and Watt boilers.

		Boiler surface exposed to fire and flues. Per No. of boilers.	Per sq ft of fire grate.	Per lb. of water evaporated per hour.	Per lb. of fuel consumed per hour.	Weight of fuel per sq. foot of grate per hour.
Boulton & Watt boilers.	Albion mills	1	21·28	0·15	1·294	16·44
	Old ford	1	15·78	0·163	1·3	12·21
Cornish boil's	Wheal Towan.	3	36·11	1·205	12·75	2·83
	United Mines.	3	43·88	1·022	10·72	4·09
	Old ford	4	43·7	1·56	13·1	3·64

By this table it appears, that in the Cornish boiler 1st. The ratio of the area of the heating surface to that of the fire grate is more than twice as great as in the common boiler.

2d. The proportion of heating surface to the quantity of water evaporated, or of fuel consumed, in a given time, is about ten times as great.

3d. The rate of combustion is slower with the Cornish boiler than with the common one, in the proportion of about 1 to 4.

One pound of steam will raise 3,657 cubic feet of air 10°, and cause it to expand from 352 to 42°, about 3,733 cubic feet.

The heat that would raise 1 pound of water 1° would raise a pound of air 3°·7: one pound of air = about 11 cubic feet.—*Weale's Engineer's Pocket-book.*

AMERICAN RAILROAD JOURNAL.

Saturday, July 20, 1850.

Steam Communication with Europe.

The project of opening a new route for travel between the United States and Europe, by extending a railway from Maine to the eastern part of Nova Scotia, and by establishing a line of steamers from that point to Galway Bay, in Ireland, to connect with a line of railroad from thence to London, is attracting much attention in the Eastern States and in the British Provinces, and bids fair to assume an importance corresponding to the magnitude of the object to be accomplished.

The scheme, as developed, is comparatively new. People, therefore, are startled at its magnitude and incredulous as to its success. To the great mass the *unknown* is always impossible. What distinguishes superior minds is anticipating the future, and in bringing out into the actual, the concrete, what existed only in the abstract. But the proofs of the success or practicability of this scheme do not rest on opinion, nor in the superior sagacity of individuals. Its feasibility we think can be demonstrated by arguments apparent and conclusive to all.

In the first place, the route proposed is much more direct than the one now followed, and consequently shorter. Nearly one thousand miles will be performed by railroad. This will be passed in one-third of the time it takes a steamer to make the same distance. By reducing the distance to be run by steamers, lighter and swifter boats can be used. By this means, the passage could be shortened by at least two, and probably three days. If this fact can be proved, or should be admitted, then the success of the plan is proved. The saving of two days to the business or travelling community in a voyage to Europe, is a matter of such importance that this alone would give it the preference over all others. This route too would reduce very materially the cost of the trip. The distance by railroad could be passed at a cost not exceeding two cents per mile. The steamers would undoubtedly carry at a less rate, as the cost of the voyage would be essentially reduced by diminishing the distance to be run. The cost of a passage from New York to Boston by steamboat and railroad, is less than two cents per mile, and there can exist no reason why, with a sufficient number of passengers, a voyage across the Atlantic by this mixed mode of conveyance should be at a higher rate. If this scheme should be carried out we believe that the cost of the voyage would be reduced one-half.

A voyage by this route would be much safer than by the route now pursued. It is well known that the liability of a steamer to accidents is confined to those parts of her route lying within the Irish Channel and on the coast of Maine and Nova Scotia. These dangers would be entirely avoided by the route advocated. It would prove the quickest, safest, pleasantest, cheapest, and consequently the successful route against all rivals.

This being admitted, the next question is, can it be opened? To secure this, all that is wanting is the construction of a railroad from Waterville, Maine, to the proper point in Nova Scotia. Now, we have every reason to believe that that portion of the line in New Brunswick and Nova Scotia would be undertaken by the Provincial governments. The feeling in the Provinces in favor of railroads is very strong. They are looked upon as the only means by which their former prosperity can be restored. The only reason why their construction has not been engaged in has been the want of a feasible scheme. They have been laboring under the hallucination that the Halifax and Quebec road was the proper work to engage their efforts. This project, utterly impracticable in itself, and unjustifiable upon any mode of reasoning, kept possession of their mind and embarrassed all their movements. It was looked upon as a work national in its character, and called for by the position of these Provinces in relation to the Canadas. For a similar reason it was believed that the home government would aid a work, the design of which was to unite into harmony conflicting interests, and Provinces hostile to each other. This hope is now entirely cut off, and with it the attention of the people of the Lower Provinces is now turned towards the only scheme which is practicable in itself, and which will secure the end which they have endeavored to attain. The carrying out of the proposed road will open to the Provinces the cities of the United States, their natural and appropriate markets, the want of which is the great cause of the depression which exists there. It will place them on the line of the great route of travel between Europe and America, and attract to them population and wealth, and secure the developement of their resources to their fullest extent. These results will be fully appreciated there, and we have no doubt will secure, not only the prompt co-operation of the Provincial authorities, but of the home government, which will not suffer itself to lose so favorable an opportunity as this to regain the favor and good will of her discontented Provincial subjects. The success of this portion of the line we may count as certain. The most difficult part of accomplishment we think is that from Bangor to the eastern line of the State. This portion of it is almost an entire wilderness, and the country traversed can afford no aid to the work. But if it can be made certain that the Provincial line could be built, we think there can be no doubt that the roads extending east from New York would make common cause in favor of the line in Maine, and extend the necessary aid to its construction. Such would be for their interest, and such we have no doubt would be the result.

Such are some of the arguments in favor of this route, and the reasons that lead us to expect that it will speedily be opened. We believe the scheme justifiable and attainable as a private enterprise alone. But when the public shall fully understand its merits and importance, an impulse will be given to it such as is communicated, where public sentiment is unanimous, which not only demands results, but furnishes the means to accomplish them.

A convention to take into consideration this project is to be held in Portland on the 31st instant. Below we give the Circular inviting attendance and co-operation.

CIRCULAR.

The plan of extending a line of railway through the State of Maine to the Lower British Provinces, and to some good harbor on the eastern coast of Nova Scotia, has long been regarded as a measure of the highest importance to the commercial interests of this continent and Europe. Events which have occurred on this side the Atlantic within the last few years, both in the British Provinces and the U. States, have led the most discerning minds of both countries to concur in the belief, that the time is rapidly approaching, if not already arrived, when an effort should be made, by all parties interested in such a result, towards its consummation.

The region of this continent lying to the east of Lake Champlain and the Hudson River, and between the River and the Gulf of St. Lawrence and the Atlantic Ocean—in reference to its geological features, its topographical and physical geography—presents many striking characteristics, inviting the attention of the naturalist and the scientific inquirer. Its soil, climate and commercial advantages, indicate that it possesses the greatest natural capacity for the development of the highest physical and social condition of man, and point it out as the future abode of the most enterprising portion of the race.

This region of country from the circumstances of its early settlement, and the political changes it has undergone, has witnessed the most exciting scenes in the history of this continent, has been the theatre of the fierce contests of different races, and shared in all the eventful changes with which for more than two centuries the nations of Europe have been disturbed.

The final predominance of the English race throughout this region had scarcely become established, when new relations awakened an equally embittered hostility between England and her former subjects, leading both countries into bloody and destructive wars.

The spirit of peace has at last prevailed—national animosties, sectional and political hostility have disappeared between the English races, since the establishment of the boundaries of Maine and Oregon, and the contests of war have been succeeded by a noble and generous rivalry for the promotion of the arts of peace.

The introduction of the steamship and the railway has made former enemies friends, and the citizens of Montreal and Portland, of Halifax and Boston, of St. John and New York, are to all intents and purposes one people, speaking a common language and struggling for the same destiny.—National hostility has given way to commercial and social intercourse, and under whatever form of government they may hereafter exist, they can never again become hostile or unfriendly.

An effort is now made to increase the means of communication between different parts of this extended region. In aid of this purpose, a Convention is to be held at Portland on the 31st of July, instant, at 11 o'clock in the forenoon, at the City Hall, at which time and place it is proposed to consider the various schemes which have been proposed for the accomplishment of this result. The immediate object of this Convention is, to agree upon the most feasible plan for prolonging the line of railway from the State of Maine to the Lower British Provinces, to some good harbor best fitted to become the entrepot and terminus for the most direct line of trans-Atlantic navigation, and form a connection by railway between the Upper and Lower British Provinces through the State of Maine.

Such a line of railway extended from New York and Montreal to a point of connection in Maine, and from thence to Halifax, would undoubtedly prove the most popular and most frequented highway for all travellers between Europe and America, and a great thoroughfare both for the old and new world. The Atlantic can be most readily crossed from the eastern coast of Nova Scotia to the western coast of Ireland, thence by railway to Dublin, and by steam to Holyhead, whence the Menai Strait is crossed by the Britannia tubular bridge, and so to London or Liverpool, or any part of Great Britain or the continent of Europe. One great central line for European communication once laid down, into which the various branch lines could enter on either side as required, connected also by lines of railway with Montreal and Quebec, would secure

a system of railways surpassing in value and importance any that has yet been proposed.

Whatever views may have been formerly entertained on this subject by the people of the several British American Provinces, we have reason to believe they are now unanimous in maintaining the opinions above expressed.

At a meeting of the Chamber of Commerce and citizens of St. John, held on the 6th of July, instant, to consider what steps should be taken to further the proposed line of railway through this Province, in connection with a Grand Trunk line from Halifax to Boston, it was

Resolved, That this meeting feel the most lively interest in the establishment of a line of railway from the frontier of the United States to Halifax, through this Province by Calais, St. John and Shediac; and further resolved, that as the only portion of the proposed line from the United States, eastwardly, now surveyed, is between Calais and this city; a petition be presented to the Executive to cause a preliminary survey of this line to be made during the present session, upon the understanding that the State of Maine will survey the line, westwardly, from Calais to Bangor.

Resolved, That a committee be appointed to prepair the foregoing petition, and take such other steps as may be expedient for carrying out the subject matter of the same.

Resolved, That the committee be appointed to authorise delegates to attend the convention in Portland, on the 31st inst., for the purpose of conveying to the citizens of the United States, engaged in the undertaking, the determination of this meeting to use its utmost endeavors to complete a line of railway through the Province of New Brunswick, to connect Halifax with the United States.

Similar measures have been adopted at Halifax, and it is believed that the same feeling prevails with the government and people of Canada.

At a public meeting of the citizens of Portland, held on the 11th instant, the undersigned were appointed a committee of their fellow citizens to consider what steps are necessary to be taken in furtherance of a proposed line of railway from the State of Maine to the Lower British Provinces, and to take such further measures as may be necessary in view of the proposed convention in aid of said project, to be holden at Portland on the 31st of July instant.

They were also directed to take charge of all measures necessary to carry out the subject matter of the same, to invite the attendance upon such convention, of the Governor and Council, and the Legislature of Maine—delegates from the various railroad companies, and the friends of public improvement throughout the country.

The undersigned reiterate the expression made at said meeting of their most lively interest in every measure calculated to advance the project of extending a grand trunk line of railway from the State of Maine to the Lower British Provinces, and most cordially approve the plan of having a survey from Bangor to St. John City, or to the boundary of Maine, made forthwith, at the expense of the State, for the reasons, and in accordance with the petitions to this effect, pending before the Legislature of Maine.

The undersigned are happy in being able to say that assurances just received from St. John, leave no doubt on their minds, that an immediate survey will be ordered by the Executive of New Brunswick, of that portion of the line from St. John City to the boundary of Maine.

Under the instructions given us by the public meeting in this city—and with a view to carry out the plan proposed—the undersigned invite your attention to the subject matter of this communication, and respectfully request your attendance at said convention.

We are encouraged to believe, that the completion of this great work, can be secured within a reasonable time, without withdrawing any portion of the means of the people along the line, wanted by them for the ordinary purposes of business. A liberal grant of public lands, and of public credit, from Nova Scotia, New Brunswick and Canada, equal to that tendered in aid of the Quebec and Halifax railway, with suitable compensation from the British and American governments for the carrying of the mails, will we believe, at once invite into it private capital from Europe and the commercial interests of this country, fully adequate to its early completson.

But whatever may be the pecuniary merits of the enterprise, it has social and commercial relations of the most delicate and patriotic character. Whatever shall tend to allay national prejudice, and harmonize national differences, contributes to advance the highest interests of humanity, and promote the welfare of the race.

The most sublime spectacle which the history of the world has ever disclosed, is being enacted in our day by the advancement of the English race, towards universal supremacy—a supremacy not maintained by tyranny or force, but resting upon the solid foundations of intellectual superiority—a love of freedom and social order. Regardless of artificial lines of demarkation, or of the political divisions of this continent, we desire that intercourse between those who speak a common language, and are striving for the same destiny, shall be as free as the thoughts of the mighty race who have become the masters of the world.

John A. Poor,	James B. Cahoon,
Charles Q. Clapp,	A. C. Morton,
Allen Haines,	John Russel,
Joshua Dunn,	John Neal,
T. C. Hersey,	A. W. H. Clapp,
Charles Jones,	Woodbury Storer,
Daniel F. Emery,	Geo. R. Davis,
Thomas Cummings,	H. B. McCobb,
John M. Wood,	Luther Jewett,
Wm. Paine,	John Appleton,
P. Barnes,	Abner Shaw.

Portland, July 13, 1850. *Committee.*

Missouri.

The Pacific Railway.

We learn from Mr. Allen, the President of the Pacific Railroad Company, that the Chief Engineer has returned to the city from his reconoisance of the entire route from St. Louis to the western borders of the State. He found the ground as favorable, in the general, as he anticipated, and thinks the road can be constructed at a very reasonable cost. He reports that the best feeling towards the enterprise prevails among the people along the entire route, and that they will subscribe liberally as soon as the work is fairly begun. We understand that an accurate survey of the route will be made at the earliest practicable period, and that a considerable force will be placed upon the road early next spring. It is expected that from 50 to 100 miles will be completed next year.—*St. Louis Intel.*

Railroad Negociations and Securities.

The most important transactions in railroad negociations since our last have been the sale of $234,000 of 10 per cent. Milwaukie city bonds, $110,000 Shelby County, Ohio, 7 per cent. bonds, and the purchase of 11,000 tons of iron by the Ohio and Pennsylvania railroad. Some other negociations have been made which have not yet been made public. The Milwaukie bonds have ten years to run, and were sold at a small advance. The price obtained for the Shelby County bonds has not been made public.

While negociations are pending it may be advisable to avoid publicity. Indeed, secrecy may be essential to the success of a negociation. But we are satisfied that it is decidedly for the interest of railroad companies after the sale is completed that the price obtained should be made public, for reasons which only require to be stated to be apparent.

The high price which the stocks of the general government and the States in best credit commanded, shows the abundance of money. The State debt of Ohio amounts to about $16,000,000, and her 6 per cent stocks are at a premium of from 12 to 15 per cent., while the 7 per cent. bonds of some of her richest counties are at an equal amount below par. Now this unequality is not based upon the intrinsic value of the securities, for in fact the county bond of the two is the most secure, and certain to be paid. The security of the State debt rests upon its public faith. Should the State refuse to pay, the lender has no remedy. The bonds of the counties rest upon the same public faith, and the lender may collect his debt by law if the county refuses to pay. The holder of the county security has all the security of the holder of the State stocks, and in addition, may enforce his claim at law. But the purchaser admits that the security in both cases is perfect; but he says to the seller "your county bonds are not known in market. Men will not purchase what they cannot readily sell. Until your securities are known, and until they have acquired a character in the maket, and until their convertibility at all times is established, you must expect to sell at a discount. The difficulty is not so much in the goodness of the security as in the fact that it is not known to be so."

This is all very true. A good illustration of this may be found in the price that the Portland city bonds command, compared with the bonds of the city of Milwaukie. The former has issued bonds to the amount of $1,000,000, and is now before the Legislature of Maine for liberty to issue $500,000 more to aid the Atlantic and St. Lawrence railroad. Milwaukie has issued $234,000 10 per cent. bonds to aid the Milwaukie and Mississippi railroad.—The latter is the larger city of the two, and is grow much faster than Portland. Yet, the 6 per cent. Portland city bonds are sought for at par, which is all that can be obtained for the 10 per cent. Milwaukie bonds. The cause of this great disparity in market value, is owing to the fact that the character and credit of the city of Portland is known to the business and monied men, while that of Milwaukie is not. As soon as the latter shall become equally well known in the circles of business her securities will stand equally well.

So long, therefore, as western men continue to bring into our market securities as good as those that thus far have been offered, it is for their interest to call public attention to them in every manner possible. If bonds are sold for 75 cents on the dollar that should bring par, the sooner this is made public the better. The simple announcement of such a sale will attract attention and purchasers; competition will carry up the price, and investigation and inquiry will secure to every security that position in the money market that it is entitled, from its inherent value, to maintain.

It may be said that the extremely low rate at which companies may be compelled to sell their securities would injure their credit, if made known. It is a full answer to this to say, if a company cannot get along without paying exhorbitant shaves the sooner it stops the better. Let it wait till it can get money on reasonable terms. Its prosecution is not justified on any other ground. A railroad cannot afford to pay anything more than simple interest, any more than can a merchant, and succeed. But the Western roads are entitled to credit upon the securities they offer. Their care should be to make the value of them known, and a good price will necessarily follow.

Connecticut.

The city of Hartford has subscribed $500,000 to extend the Hartford and Willimantic railroad to Boston, either by way of Providence or the Norfolk County railroad.

Ohio and Pennsylvania Railroad.

Gen. William Robinson, Jr., the President, and Solomon W. Roberts, Esq., the Chief Engineer, of the Ohio and Pennsylvania Railroad Company, have concluded their negociations for the purchase of eleven thousand tons of rails, at 60 lbs. per yard, to lay the road from Pittsburgh to Massillon. Of this amount, 3,000 tons are to be made at Brady's Bend, on the Allegheny river, fifty miles above Pittsburgh, and are to be delivered on the Ohio river, between Pittsburgh and Beaver, early next spring, so that that portion of the road may be opened as early in the season as practicable. The remaining 8,000 tons will be foreign iron, which is contracted for to be delivered in this country in time to permit the opening of the road from Pittsburgh to Massillon, and also to Cleveland, in the autumn of next year. The terms upon which these negociations have been effected are said to be highly favorable to the company.

Railroad Iron.

CONTRACTS made by the subscribers, agents for the manufacturers, for the delivery of Railway Iron, at any port in the United States, at fixed prices, and of quality tried and approved for many years, on the oldest railways in this country.

RAYMOND & FULLERTON, 45 Cliff st.

Railroad Iron.

B. O. Railway Tires, Railway Wheels,
Scotch Pig Iron, Tin Plates and Banca Tin,
Muntzs Patent Metal Sheathing,
Baltimore Copper.

Contracts for Rails made on behalf of the manufacturers, for delivery at any ports in the United States, at fixed prices.

Bowling Tires and Tire Bars and Scotch Pigs imported to order.

Muntz's Ship-sheathing, and a general stock of Tin Plates and Banca Tin in store, and for sale by

RAYMOND & FULLERTON. 45 Cliff st.

Bowling Iron. Stamped B.O.

Railway Tire Bars	Rivet Iron
Locomotive and other Axles	Locomotive Frame do
Boiler Plates	Bars,

and every other description of this superior Iron.

The subscribers, agents for the sale of Bowling Iron, are prepared to execute orders for importation, especially for railway and machinery uses, with despatch from the manufacturers.

RAYMOND & FULLERTON, 45 Cliff st.

Patent Self-clinching Railroad Spikes.

These spikes have been in use upon various roads for several years, and have met with universal approval by Engineers. They drive in the manner shown, turning themselves, and are therefore not liable to work loose. They will prove of great value to secure the chair.

We are also manufacturing railroad spikes, hook and flat head; wrought chairs, clamps, etc., of superior quality, and are prepared to contract for any pattern or weight upon favorable terms.

SMITH & TYSON,
25 South Charles st., Baltimore Md.

Lovegrove's Patent Cast Iron Water and Gas Pipes.

THE Subscriber, the Inventor and Patentee of the Centrifugal mode of giving form to metallic substances while in a molten state, is preparing to make Cast Iron Water and Gas Pipes, of any dimensions, at prices much lower than they can be made in the old manner, and the pipes warranted to stand a pressure of three hundred pounds to the square inch, and to be soft enough to drill. Steam Engines and all kinds of machinery. Cast Iron Doors and Frames, and Mill Castings of every description, made to order.

THOMAS LOVEGROVE,
Machinist and Founder,
West Falls Avenue, below Pratt st., Baltimore.

Ray's Patent India Rubber Car Springs.

Savannah, Ga., May 22, 1850.

FOWLER M. RAY, Esq.,

Dear Sir: I have no hesitation in saying, after having used on our road your springs and Fuller's, that I consider yours decidedly the best in every particular, and in this opinion I am sustained by all our officers. Fuller's spring has a tendency to split, and also to chafe or abrade by the constant friction on the cast iron plates or disc: and in my opinion is not near so elastic as yours.

Your springs, which have been in use on our road for 12 or 15 months past, and in constant use under both passenger and freight cars, are to all appearances as elastic, sound and good, as when first put in use.

We are now building eigty-five new cars, of which for fifty-sets the springs have been ordered of you.

GEORGE A. ADAMS,
Master Carpenter,
Central Railroad and Banking Co. of Georgia.

—

Connecticut River Railroad Office,
Northampton, May 4, 1850.

E. CRANE, Esq.,

Dear Sir: It is now about two years since I first tried the experiment of using a set of Ray's India-rubber Springs upon one of our merchandise cars, and although the car has been in constant service since that time, I do not on examination find the slightest difference either in the thickness or elasticity of the material.

The same result has followed wherever we have applied them, either for wheel or draw springs on Engines, Tenders or Cars. At present we use no other; either in replacing old springs or building new cars—and I am perfectly satisfied that for economy, durability, safety, and ease of motion, that Ray's India-rubber is the best article for Springs which has been presented to the public.

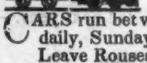
Yours respectfully, J. HUNT,
Supt. Connecticut River Railroad.

—

EDWARD CRANE, Esq.,

Dear Sir: Having applied to cars of the Boston and Worcester Railroad Corporation, Ray's Vulcanised Rubber Springs (where they have been in use for some two years last past), I have had occasion to observe their operation, and am free to say in answer to your inquiries, that they retain their *elasticity* perfectly during all changes of atmospheric temperature: and are in my opinion a most valuable acquisition to Railroad Cars—are not liable to derangement, as is the case with steel springs; while at the same time it costs less to apply them. Respectfully yours,

D. N. PICKERING,
Supt. Motive Power, Bost. & Wor. Railroad.
Boston, April 15th, 1850.



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NEW YORK.

CARS run between Rouses Point and Chateaugay daily, Sundays excepted, as follows:

Leave Rouses Point at . . 3½ A.M.
Leave Chateaugay at . . 6½ P.M.

On the arrival of the cars at Chataugay, stages are in readiness to take the passengers to Ogdensburg, where they arrive the same day.

Passengers leave Ogdensburg in the morning by stage, and take the evening train from Chataugay to Rouses Point, where they go immediately on board the steamboats which run north and south on Lake Champlain.

Passengers leaving New York in the evening by the way of Whitehall, will arrive at Rouses Point the next night, and the next morning pass directly from the boat to the cars, and arrive at Ogdensburg the same day. CHARLES L. SCHLATTER, Supt.

Ibbotson, Brothers & Co's CELEBRATED CAST STEEL AND

Best Cast Steel Royal Improved Files, well known as better adapted for Engineers' and Machinists' purposes than any now in use in the United States.

Every description of Square, Octagon, Flat and Round Cast Steel, Sheet, Shovel and Railway Spring Steel, etc., and Steel to order for any purposes—manufactured at their works in Sheffield—and universally known by the old stamp "Globe."

HENRY J. IBBOTSON, Agent.,
218 Pearl st., New York.

NOTICE.

☞ A young man of experience in Surveying wishes a situation on a Railroad as an Assistant. Please apply at this office.

Election of an Engineer.

At a Meeting of the Board of Directors of the Virginia Central Railroad Co. at Charlotteville on the 4th day of June, 1850,

Resolved, That the election of a Chief Engineer in the place of Wm. A. Kuper, whose resignation has been accepted, is postponed to take place in Richmond on Tuesday the 18th of June instant.

A copy from the minutes.

JOHN GARRET, Secretary.

NORRIS' LOCOMOTIVE WORKS,

SCHENECTADY, N. Y.

THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.

Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch.

Chilled Wheels for Cars, Tucks and Tenders, made from the toughest iron.

Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by

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American Railway Guide,

AND POCKET COMPANION FOR THE

UNITED STATES;

CONTAINING Correct Tables, shownig the time for starting of trains from all stations, distances, fares, etc., on all the Railway lines in the U. States; also many of the principal Steamboat and Stage routes—accompanied by a complete RAILWAY MAP. Price, single copies 12½ cts., or $1 per annum. Published on the first of every month, corrected from returns furnished by the Railway Superintendents throughout the Union.

This book has been compiled somewhat on the plan of Bradshaw's Guide, with such improvements in size, form and arrangement as have seemed desirable; and the publisher confidently hopes it will not be found liable to the objections of incompleteness and incorrectness, which have been made, and justly too, against various other similar works heretofore issued.

The subscriber having had the management of the NEW YORK PATHFINDER almost from its commencement, has enjoyed superior facilities in obtaining information relating to the thoroughfares of travel, and is therefore well qualified to prosecute with success the arduous undertaking of furnishing a complete and correct national guide book.

STRINGER & TOWNSEND, General Agents, 222 Broadway: and sold also by Booksellers and Periodical Dealers generally throughout the country; also on all the Railways and Steamboats.

CURRAN DINSMORE, Publisher.
N. Y. Pathfinder Office,
138 Fulton St., New York City.

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer—Fuller's Patent—Hose* from 1 to 12 inches diameter. Suction Hose. *Steam Packing*—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands.* These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and *warranted to perform well.* Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price $1,500.

Address J. B. MOORHEAD,
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia.
September 6, 1849.

Spikes, Spikes, Spikes.

ANY person wishing a simple and effective Spike Machine, or a number of them, may be supplied by addressing J. W. FLACK,
March 6, 1850. Troy, N. Y.

Great American Engineering

AND MECHANICAL WORK, just published in medium folio, 75 cts. to Subscribers, One Dollar to non-subscribers.

Part VI of "Specimens of the Stone, Iron and Timber Bridges, Viaducts, Tunnels, &c. &c. of the United States Railroads." By George Duggan, Architect and Civil Engineer.

The present part contains beautifully executed plans, elevations and sections of the Timber Bridge (three spans of 150, and one span of 160 feet) across the Delaware at Saw Mill Rift, on the line of the N. York & Erie R. R., with the specifications, estimates, bills of timber, iron, etc.

N.B.—With the present (6th) part, are given specimen Plates of the APPENDIX, (or "THEORETICAL AND PRACTICAL TREATISE ON BRIDGE BUILDING, etc. etc.") consisting of plans, elevations, sections and details of a cast iron oblique arch, 130 feet span, across Fairfield st. Manchester, on the line of the Manchester and Birmingham Railroad. Also a specimen sheet of the letter press of the APPENDIX, consisting of an introductory article on the *Application of Iron to Railroad Structures.*

"It is a work that was a great desideratum, and must prove of great benefit to the engineering profession generally, and especially to the tyro in practical engineering and mechanical knowledge; in truth it strikes us, that it would require years of labor and patient toil on the part of a young engineer to prepare the drawings, and collect the information that will be embodied in this work, and can now be secured for the trifling sum of $9"—[Scientific Amer. March 16, 1850.

In connection with this subject (Iron Railroad Structures) we take occasion to call attention again to Mr. Duggan's valuable and expensive publication, exhibiting drawings, with full descriptions of the various stone, iron and wooden bridges, viaducts, tunnels, culverts, etc., of all the Railroads in the United States. Mr. Duggan is an accomplished Architect and Civil Engineer, who came from Ireland to this country to exercise his profession; but finding Railroad construction here, in many respects, different from that he had been accustomed to in Europe, he applied himself to the study of our system; and the fruits of his researches and investigations embodied in this work, are well calculated to meet the exigencies of engineers, and to assist draughtsmen, bridge builders, mechanics and students.—[N. Y. Journal of Commerce, Feb. 14, 1850.

Published by GEORGE DUGGAN,
300 Broadway, New York.

To whom all communications should be addressed, and subscriptions forwarded.

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Doremus & Nixon,

IMPORTERS AND FURNISHERS

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" Crimson "	" Crimson " (Elegant.
" Scarlet "	" " " (Gen. Taylor.

BROCATELLES.

Crimson Silk Brocatelles.	Gold and Maroon do.
Gold and Blue "	" Brown "
Silk and Wool "	of every color.

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Of elegant designs and colors.

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The most beautiful goods ever shown in this country, and the subscribers are the sole agents for the sale of them.

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Do. Silver ground velvet printed. } dimensions req'd.

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JNO. W. A. STRICKLAND, Agent.
New York, 1850. 1y16

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AGENTS for the Balt. City Rolling Mill, from which establishment they are prepared to furnish Ellicott's round, square, and flat bar iron, puddled and charcoal boiler plates and billet iron—also agents for the sale of the Laurel and Maryland (Balt.) charcoal forge pig irons, Balt. hard iron for chilling wheels, anti-Eatam nails, Catoctin foundry iron, boiler blooms from the Caledonian works, Wm. Jessop & Son's cast steel, Coleman's blister steel and nail rods, hoop, band, sheet, oval and common English iron.

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THE Subscribers have constantly on hand Rafford's Stourbridge, Oak Farms Stourbridge, Lister, Wortley, Red and White Welsh Fire Bricks, common and fancy shapes. Also,

ROOFING SLATES,

from the best Welch quarries, and of all sizes. Also,

COAL,

of all kinds—Liverpool Orrell and Cannel, Scotch, New Castle, Pictou, Sidney, Cumberland, Virginia, and all kinds of Anthracite coals. Also,

Pig Iron, Salt, etc., etc., for sale at the lowest market price. Apply to

SAMUEL THOMPSON & NEPHEW,
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FAIRBANKS' RAILROAD SCALES.—THE subscribers are prepared to construct at short notice, *Railroad* and *Depot Scales*, of any desired length and capacity. Their long experience as manufacturers—their improvements in the construction of the various modifications, having reference to strength, durability, retention of adjustment, accuracy of weight and dispatch in weighing—and the long and severe tests to which their scales have been subjected—combine to ensure for these scales the universal confidence of the public.

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Eastern Railroad.	Boston & Maine Railroad.
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Balt. and Ohio Railroad.	Baltimore and Susq. Road.
Phila. & Reading Road.	Schuylkill Valley Road.
Central (Ga.) Railroad.	Macon and Western Road.

New York and Erie Railroad.

And other principal Railroads in the Western, Middle and Southern States.

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April 22, 1849. 1y*17

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A MILLION OF DOLLARS

Securely invested in Bonds and Mortgages on real estate in this city and Brooklyn, and stocks of the State and City of New York and United States Government.

The company declared a dividend of profits of fifty-two per cent. on all existing policies on the 31st of January, 1848.

All the Profits are Divided Among the Insured.

Persons may effect insurance on their own lives and the lives of others.

A married woman can insure the life of her husband, the benefits of which are secured by law for the exclusive use of herself or children.

Clergymen and all others dependent upon salaries or their daily earnings are specially invited to avail themselves of a resource whereby their surviving families may be secured from the evils of penury.

Pamphlets explanatory of the principles of Mutual Life Insurance, and illustrating its advantages, with forms of application, may be obtained at the office of the company, 35 Wall street, or of any of its agents.

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Charles Ely,	Wm. J. Banker,
John C. Cruger,	John M. Stuart,
Charles King,	Francis S. Lathrop,
Alfred Pell,	Nathaniel Hayden.

JOSEPH. B. COLLINS, President.
ISAAC ABBATT, Secretary. 3m9

NOTICE TO

Superintendents of Railroads.

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

P. B. TYLER.

(COPY.)

UNITED STATES PATENT OFFICE,
Washington City, D.C., April 28th, 1846.

SIR: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully, EDMUND BURKE,
Commissioner of Patents.

To Philos B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENDLETON, Agent, 149 Hudson St., New York.

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL superior quality for Locomotives, for sale by

H. B. TEBBETTS,
No. 40 Wall St., New York.
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PHILADELPHIA CAR MANUFACTORY,

CORNER SCHUYLKILL 2D AND HAMILTON STS.,

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Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day.

Philadelphia, June 16, 1849. 1y25

C. W. Bentley & Co,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge,

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Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fillings for Steam, Water, Gas, etc., constantly on hand.

Baltimore, June 6, 1849.

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THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.

Jan. 20, 1849.

ENGINEERS.

Atkinson, T. C.,
Alexandria and Orange Railroad, Alexandria, Va.

Bancks, C. W.,
Civil Engineer, Vicksburg, Miss.

Buckland, George,
Troy and Greenbush Railroad.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Cozzens, W, H.,
Engineer and Surveyor, St. Louis, Mo.

Alfred W. Craven,
Chief Engineer Croton Aqueduct, New York.

Davidson, M. O.,
Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

S. W. Hill,
Mining Engineer and Surveyor, Eagle River, Lake Superior.

Holcomb, F. P.
Southwestern Railroad, Macon, Ga.

Johnson, Edwin F.
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,
Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston,

Prichard, M. B.,
East Tennessee and Georgia R. R., Cleveland, Tenn.

Roebling, John A.,
Trenton, N. J.

W. Milnor Roberts,
Bellefontaine and Indiana Railroad, Marion, Ohio.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Sanford, C. O.,
South Side Railroad, Virginia.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Sours, Peter,
Rahway, New Jersey.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trautwine, John C.,
Panama Railroad—Address through office of Panama Railroad Co., 78 Broadway, N. Y.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Troost, Lewis,
Alabama and Tennessee Railroad, Selma, Ala.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukie, Wisconsin.

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Washington Hotel,
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Will attend to the examination of mining tracts near Lake Superior, and prepare Reports and Maps.
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" Barston, Pope & Co., "
" Earps & Brink, Philadelphia.
" E. Pratt & Brother, Baltimore.
John Barstow, Esq., Providence.
Lewis Bullard, Esq., Boston.
February 9, 1850. 6m*

United States Railroad Guide and Steamboat Journal.
CONTAINING OFFICIAL TIME ADVERTISEMENTS, Tables of Stations, Distances, Fares, Time, etc., with much miscellaneous matter for the travelling public. Price 12 cents a copy. Yearly subscription $1. Published at 43 Ann street, New York.

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Manufacturers of Cast, Shear, German and Blister
STEEL,
Of all Descriptions, Warranted Good.
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Of all descriptions. *Warranted* Good
FILES.
Manufacturers of Machinists' Warranted Best Cast Steel *Files*, expressly for woring upon Iron and Steel, made very heavy for recutting.
☞ A full Stock of *Steel* and *Files* at all times on hand. 6m4

Walter R. Johnson,
CIVIL AND MINING ENGINEER AND Attorney for Patents. Office and Laboratory, F St., opposite the Patent office, Washington, D. C.

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IRON COMMISSION MERCHANTS,
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Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED —'Potomac' and other good brands of Pig Iron.

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CLEAN COP WASTE, suitable for cleaning Railroad, Steamboat and Stationary Engines, constantly an hand and for sale by
KENNEDY & GELSTON,
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October 27, 1849, 3m

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MANUFACTURERS OF
LOCOMOTIVE CRANKS AND CAR AXLES,
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Forge at Commercial Point, Dorchester,
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Railroad Car Manufacturer's Furnishing Store.

F. S. & S. A. MARTINE,

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PLUSHES, CURTAIN MATERIALS, ETC.,
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3-4 and 6-4 Damasks, Union and Worsted; Moreens, Rattinetts, Cloths, Silk and Cotton Velvets, English Buntings

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WILLOW ST. WHARVES, PHILADELPHIA.

AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.

July, 27, 1849.

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OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,

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HERRON RAILWAY TRACK.

Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

To Railroad Companies.

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SAFETY AND ECONOMY.

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Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.

May 16, 1849.

Machinery Warehouse.

S. C. HILLS, No. 43 Fulton street, New York, has constantly for sale Steam Engines, Boilers, Lathes, Chucks, Drills, Planers, Force and Suction Pumps; Tenoning, Morticing and Boring Machines, Shingle Machines, Bolt and Nut Machines, Belting, Oil, Iron and Lead Pipe; Rubber, Percha and Leather Hose, &c., &c.

S. C. H.'s arrangements with several machine shops are such that he can supply, at very short notice, large quantities of machinery.

November 23, 1849.

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Bar Iron, Lead, Spelter, Tin, Copper, etc.,
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(Near Broadway,)
NEW YORK

Manufacture of Patent Wire ROPE AND CABLES,

For Inclined Planes, Suspension Bridges, Standing Rigging, Mines, Cranes, Derrick, Tillers, &c., by
JOHN A. ROEBLING, Civil Engineer,
TRENTON, N. J.

Samuel D. Willmott,

MERCHANT, AND MANUFACTURER OF
CAST STEEL WARRANTED SAWS,
—AND FILES—

IMPORTER OF THE

GENUINE WICKESRLY GRINDSTONES
NO. 8 LIBERTY STREET,
NEW YORK.

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ANALYTICAL & CONSULTING CHEMISTS,
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SCHOOL OF CHEMISTRY.

IRON.

Railroad Iron.

3,000 TONS C. L. MAKE 63½ lbs. per yard, now landing and to arrive.

Also contracts made for future delivery of above superior make English Iron.

300 Tons Banks Best Iron, Round, Square and Flat.
200 " English Bar " " " "
10 " 9-16 Square Iron for Railroad Spikes.

For sale in lots to suit purchasers by
DAVID W. WETMORE.

New York, March 26, 1850. 3m

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1¼ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address J. F. WINSLOW, *Agent*,
Albany Iron and Nail Works.

Railroad Iron.

THE Undersigned, Agents for Manufacturers, are prepared to contract to deliver Rails of superior quality, and of any size or pattern, to any ports of discharge in the United States.

COLLINS, VOSE & CO.,
74 South St.

New York, June 1, 1850.

Railroad Iron.

1,500 Tons weighing 58 lbs. per lineal yard.
500 " " 57 " "
500 " " 56 " "
500 " " 60 & 61 lbs, "

Also 2½x¼ flat rails. All the above being of approved patterns. For sale by
DAVIS, BROOKS, & CO.,
68 Broad street.

N.B.—Rails imported on commission, or at a fixed price.

Iron.

Pig Iron, Anthracite and Charcoal; Boiler and Flue Iron, Spring and Blistered Steel, Nail Rods, Best Refined Bar Iron, Railroad Iron, Car Axles, Nails, Stove Castings, Cast Iron Pipes of all sizes, Railway Chairs of approved patterns' for sale by
COLEMAN, KELTON & CAMBELL,
109 N. Water St., Philadelphia.

IRONDALE PIG METAL, MANUFACTURED and for sale by the Bloomsburg Railroad Iron Co.
LINDLEY FISHER, Treasurer.
75 N. Water St., Philadelphia.

Railroad Iron.

2000 Tons, weighing 58 pounds per lineal yard, of the most approved pattern of T rails, in store and to arrive, for sale by
COLLINS, VOSE & CO.,
74 South St.

New York, June 1, 1850.

Railroad Iron.

1675 Tons, weighing about 61 lbs. per yard, 90 tons, weighing about 52 lbs. per yard, and 825 tons, weighing about 53½ lbs. per yard, of the latest and most approved patterns of T rail, for sale by
BOORMAN, JOHNSTON & CO.,
119 Greenwich street.

New York, Feb. 25, 1850.

N.B.—B., J. & Co are also prepared to take contracts for English rails, delivered in any of the Atlantic ports of the Unitad States.

Railroad Iron.

THE UNDERSIGNED, HAVING made arrangements abroad, are prepared to contract for the delivery of Foreign rails, of approved brands upon the most favorable terms.

They will also make contracts for American rails, made at their Trenton works, from Andover Iron, in whole or in part, as may be agreed upon.

They are prepared to furnish Telegraph, Spring and Market Wire; Braziers and Wire Rods; Rivets and Merchant Bars to order, all made exclusively from Andover Iron. The attention of parties who require iron of the *very best* quality for special purposes, is respectfully invited.

COOPER & HEWITT,
17 Burling Slip, New York.

February 15, 1850.

Glendon Refined Iron.

Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "
Axles, Locomotive Tyres,

Manufactured at the Glendon Mills, East Boston, for sale by GEORGE GARDNER & CO.,
5 Liberty Square, Boston, Mass.

Sept. 15, 1849. 3m37

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, *Agent*.
Albany Iron and Nail Works, Troy, N. Y.

The above Spikes may be had at factory prices, of Erastus Corning & Co Albany; Merritt & Co., New York; E. Pratt & Brother, Baltimore, Md.

LAP—WELDED WROUGHT IRON TUBES FOR TUBULAR BOILERS,

FROM ONE AND A QUARTER TO SEVEN INCHES IN DIAMETER.

THE ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER & SON, Patentees,
28 Platt street, New York.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron. THOMAS B. SANDS & CO.,
22 South William street,

February 3, 1849. New York.

Iron Store.

THE Subscribers, having the selling agency of the following named Rolling Mills, viz: Norristown, Rough and Ready, Kensington, Triadelphia, Pottsgrove and Thorndale, can supply Railroad Companies, Merchants and others, at the wholesale mill prices for bars of all sizes, sheets cut to order as large as 58 in. diameter; Railroad Iron, domestic and foreign; Locomotive tire welded to given size; Chairs and Spikes; Iron for shafting, locomotive and general machinery purposes; Cast, Shear, Blister and Spring Steel; Boiler rivets; Copper; Pig iron, etc., etc.

MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.

August 16, 1849. 1y33

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. J. F. WINSLOW, *President*
Troy, N.Y.
ERASTUS CORNING, Albany
WARREN DELANO, Jr., N.Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.

November 6, 1848.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phœnix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehannah river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO.
45 North Water St. Philadelphia.

March 15, 1849.

Monument Foundry.

ROW, DENMEAD & SON,
of North and Monument Sts.,—Baltimore,
HAVING THEIR
IRON FOUNDRY AND MACHINE SHOP
In complete operation, are prepared to execute faithfully and promptly, orders for
Locomotive or Stationary Steam Engines,
Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills,
Slide, Hand or Chuck Lathes,
Machinery for cutting all kinds of Gearing.
Hydraulic, Tobacco and other Presses,
Car and Locomotive patent Ring Wheels, warranted,
Bridge and Mill Castings of every description,
Gas and Water Pipes of all sizes, warranted,
Railroad Wheels with best faggoted axle, furnished and fitted up for use, complete

☞Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

☞ Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by

ICHABOD WASHBURN.

Worcester, Mass., May 25, 1849.

American and Foreign Iron.

FOR SALE,

300	Tons	A 1, Iron Dale Foundry Iron.
100	"	1, " " "
100	"	2, " " "
100	"	" Forge "
400	"	Wilkesbarre " "
100	"	"Roaring Run" Foundry Iron.
300	"	Fort " "
50	"	Catoctin " "
250	"	Chikiswalungo " "
50	"	"Columbia" "chilling" iron, a very superior article for car wheels.
75	"	"Columbia" refined boiler blooms.
30	"	1 x ¼ Slit iron.
50	"	Best Penna. boiler iron.
50	"	"Puddled" "
50	"	Bagnall & Sons refined bar iron.
50	"	Common bar iron.

Locomotive and other boiler iron furnished to order.

GOODHUE & CO.,
New York. 64 South street

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON,
No 57 South Gay St., Baltimore, Md.,
Offer for sale, *Hot Blast* Charcoal *Pig Iron* made at the *Catoctin* (Maryland), and *Taylor* (Virginia), *Furnaces; Cold Blast* Charcoal Pig Iron from the *Cloverdale* and *Catawba*, Va., Furnaces, suitable for *Wheels* or *Machinery* requiring *extra* strength; also *Boiler* and *Flue Iron* from the mills of Edge & Hilles in Delaware, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.

American Pig Iron of other brands, and *Rolled* and *Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and Rich & Cos. New York Salamander Iron Chests.

Baltimore, June 14, 1849. 6 mos

Wheel, Forge and Foundry Iron.

LOCUST GROVE Wheel Iron of great strength and superior chilling property.

Balt. Charcoal Forge Iron, from Patuxent, Curtis Creek and Gunpowder furnaces.

Elkridge Foundry Iron, of superior strength and softness. Anthracite and Charcoal Iron from Pennsylvania and Virginia. Gas and Water Pipes, Lamp Posts from Elkridge furnace.

LEMMON & GLENN,
6m9 62 Buchanan's Wharf, Baltimore.

Iron.

THE SUBSCRIBERS having resumed the agency of the New-Jersey Iron Company, are prepared to execute orders for the different kinds and sizes of Iron usually made at the works of the company, and offer for sale on advantageous terms,—

150 tons No. 1 Boonton Foundry Pig Iron.
100 " No. 2 do. do.
300 " Nos. 2 & 3 Forge do. do.
100 " No. 2 Glendon do. do.
140 " Nos. 2 & 3 Lehigh Crane do do.
100 " No. 1 Pompton Charcoal do.
100 " New-Jersey Blooms
50 " New-Jersey Faggoting Iron, for shafts
Best Bars, ½ to 4 inch by ½ to 1 inch thick.
Do do Rounds and Squares, ½ to 3 inch.
Rounds and Squares, 3-16 to 1 inch.
Half Rounds, ½ to 1 in. Ovals & Half Ovals ½ to 1½ in.
Bands, 1½ to 4 inch. Hoops, ½ to 2 inch.
Trunk Hoops, ½ to 1½ in. Horse Shoe & Nut Iron.
Nail Plates. Railroad Spikes.

DUDLEY B. FULLER & Co., 139 Greenwich-st. and 85 Broad-st.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,
PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—square, flat and octagon.
Best warranted Cast Steel—square, flat and octagon.
Best double and single Shear Steel—warranted.
Machinery Steel—round.
Best and 2d gy. Sheet Steel—for saws and other purposes.
German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.
Genuine "Sykes," L Blister Steel.
Best English Blister Steel, etc., etc., etc.

All of which are offered for sale on the most favorable terms by WM. JESSOP & SONS,
91 John street, New York.

Also by their Agents—
Curtus & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.
Stickney & Beatty, South Charles street, Baltimore.
May 6, 1848.

JOHNSON, CAMMELL & Co's Celebrated Cast Steel,

AND
ENGINEERING AND MACHINE FILES,
which for quality and adaptation to mechanical uses, have been proved superior to any in the United States. Every description of square, octagon, flat and round cast steel, sheet, shovel and railway spring steel, best double and single shear steel, German steel, flat and square, goat stamps, etc. Saw and file steel, and steel to order for any purposes, manufactured at their Cyclops Steel Works Sheffield.

JOHNSON, CAMMELL & CO.,
100 William St., New York.
November 23 1849.

Railroad Iron.

OF ANY PATTERN AND WEIGHT,
Of a Favorite Brand,
And deliverable in Bond, or Duty paid, at any Port of the U. S., contracted for on favorable terms, by

CHARLES ILLIUS,
20 Beaver St., New York.

Pig and other Iron also contracted for. Sole Agent for "*Baxter's Machine and Burning Oil*"—particularly adapted for "*Railroads*" and other Machinery—Preferred to Sperm by the many now using it, and 25 *per cent. cheaper.*

CUT NAILS OF BEST QUALITY, BAR IRON (including Flat Rails) manufactured and for sale by FISHER, MORGAN & CO.,
75 N. Water St., Philadelphia.

Ogden & Martin's ROSENDALE CEMENT.

WE are prepared to enter into arrangements for supplying our Cement for public works or other purposes. We warrant the cement equal in every respect to any manufactured in this country. It attains a great degree of hardness, setts immediately under water, and is a superior article for masonry coming in contact with water, or requiring great strength.

For sale in tight barrels, well papered, at their office by OGDEN & MARTIN, 104 Wall st.
February 16, 1850. 1y*

The above cement is used in most of the fortifications building by government.

To Steam Engine Builders.

THE Undersigned offer for sale, *at less than half its cost*, the following *new machinery*, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz.

2 Wrought Iron Cranks, 60 inches from centre to centre.
1 Do. do. Connecting Rod Strap.
2 Do. do. Crank Pins.
1 Eccentric Strap.
1 Diagonal Link with Brasses.
1 Cast Iron Lever Beam (forked).

The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

HENRY THOMPSON & SON,
No. 57 South Gay St., Baltimore, Md.
Sept. 12, 1849.

8,000 Tons Railroad Iron.

THE OHIO AND PENNSYLVANIA RAILROAD CO. wish to contract for eight thousand tons of Railroad Iron, for the eastern division of their road, extending westward from Pittsburgh. Three thousand tons to be delivered on the Ohio river at Pittsburgh and Beaver, before the close of canal navigation in the present year, 1850; and the remainder in the spring of next year. The rails are to be of the H pattern, in lengths of 20 feet, and are to weigh 60 lbs. per lineal yard. They are to be subject to the inspection of Solomon W. Roberts, Chief Engineer.—For further particulars address the President of the Company at Pittsburgh.

By order of the Board of Directors.
WM. ROBINSON, Jr., President.

S. S. Keyser & Co., IRON WAREHOUSE,

Corner of South and Pratt Streets,
BALTIMORE, MD.

Selling Agents for the Rough and Ready Bar Iron and Elk Boiler and Flue Iron Rolling Mills, Sarah and Taylor Furnaces, and Wrightsville Hollow Ware Foundry, and Dealers in Bar and Sheet Iron, and Cast, Sheer, German, Blister, Spring and Electerised Steel, etc., etc.

Smith & Tyson,

GENERAL COMMISSION MERCHANTS,
No. 25 South Charles St., Baltimore, Md.

AGENTS for the Celebrated Columbia Pig Iron, suitable for Car Wheels and Chilled Rolls.

Columbia refined Charcoal Blooms; Refined Charcoal Juniatta Billet Iron for Wire; Refined Iron for Bridging, of great strength; Cut Nails, Spikes, and Brads; Railroad Spikes and Wrought Chairs. 22tf

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND,
Prest. Beaver Meadow Railroad & Coal Co., Philadelphia.
or, L. CHAMBERLAIN, Sec'y, at Beaver Meadow, Pa.
May 19, 1849. 20tf

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES, and Levels, with Fraunhofers Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by

E. & G. W. BLUNT,
No. 179 Water St., cor. Burling Slip.
New York, May 19, 1849.

Rosendale Cement.

THE NEWARK AND ROSENDALE LIME AND CEMENT CO. are now manufacturing at their works in NEWARK, N. J., and Ulster county, N.Y., a very superior article of *Hydraulic Cement*—also Lime Calcine Plaster, etc. Contractors and dealers will find it to their advantage to call or make application before purchasing elsewhere. All communications addressed to the subscriber, at Newark, N.J., will be punctually attended to.

1y*15 HENRY WILDE, Secretary.

Patent India Rubber Steam Packing.

THIS article, made by the subscriber, who alone is authorised to make it, is warranted to stand as high a degree of heat *as any that has been or can be made by any person*—and is the article which has made the reputation of India Rubber Steam Packing and the demand therefor. A large assortment of all thicknesses requisite for any description of engines, steam pipes, valves, etc., constantly on hand and for sale by the manufacturer and patentee, who will give every information regarding its properties, mode of use, etc. at the warehouse. JOHN GREACHEN, JR.,
98 Broadway, opposite Trinity Church.
New York, October, 1849.

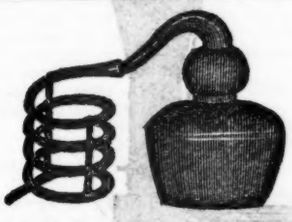
Passenger Car Linings.

THE Advertiser continues to make to order the Enamelled Car Linings which have been so highly approved the last three years, and are now exclusively used by all the Northern Railroads. No pains are spared to get out new styles, and adapt them to the tastes of every consumer.

Orders addressed to CHARLES STODDER, No. 75 Kilby street, Boston, will have prompt attention.
March 23, 1850. 2m

CAUTION.

RAILROAD COMPANIES and others are hereby cautioned against using or vending our improvement for easing the lateral motion as applied on Railroad Cars. Letters Patent having been granted to us in 1841, any party or parties so making or using said improvement without license from us will be proceeded against according to law.
DAVENPORT & BRIDGES.



P. H. Griffin,

Corner of Steuben and James Sts. Albany, N.Y.,
CONTINUES to manufacture copper flues for locomotive boilers, brewers' coppers, stills, tanner heaters, etc. Copper work in general, at the shortest notice. He has constantly on hand brass cocks, brass valves, copper pumps of every variety.
Orders promptly attended to. 1y14

FOWLER M. RAY'S Patent India-rubber Railroad CAR SPRING.

New York and Erie Railroad Shops.
Piermont, March 26, 1850.

This will certify that from practical experience in the use of Fowler M. Ray's India rubber Car Springs, I believe them to be far superior to any others now in use.

I have never known them to be affected by any change of temperature, as other Rubber Springs have been affected on this road.

I am at the present time repairing a Passenger Car that Mr. Ray and myself mounted with his springs about two years and eight months since.

The springs are at the present time as perfect, to all appearances, as when first applied to the car.
Respectfully yours,
HORACE B. GARDNER,
Foreman of the Car Shops.

—

Supt. Office N.Y. & H. R.R.,
New York, March 8, 1850.

This is to certify that we have used the Rubber Springs manufactured by Mr. F. M. Ray for the past twenty months, "both for Passenger and Freight Car Springs and Bumpers, and of different sizes," and have in every case given entire satisfaction, and I consider them the best spring now in use
M. SLOAT, Supt.

—

Harlem R.R. Depot,
New York, March 7, 1850.

This is to certify that we have used Mr. F. M. Ray's India-rubber Springs for over eighteen months, and find them to be easy and durable, and recommend them to railroad companies as being superior to anything we have tried.
J. M. SMART,
Foreman at 42d St. Depot.

Office New Jersey Railroad Co.,
Jersey City, March 8, 1850.

FOWLER M. RAY, Esq.,

Dear Sir: In answer to your enquiries respecting the operation of the Vulcanised Rubber Springs, purchased by our company from you some two years since, I reply that they are superior to any spring in use, (that I have either seen or heard of).

The improved form of your spring, consisting of a solid piece of vulcanised rubber with bands on the outside, is far superior to your first form, consisting of disks of rubber with metallic plates interposed.

The last named form was tried, if you recollect, at a much earlier period; and then was replaced by your last form.

I have no hesitation in saying that your springs have given entire satisfaction, and most cheerfully recommend them to railroad companies throughout the country for the following reasons:

1st. The cost is 30 per cent. less.

2d. Saving of weight on each car of 8 wheels from 700 to 800 lbs.

3d. Less care and attention is required, as they are not liable to get out of repair.

4th. A great saving is secured in the wear and tear of the cars and rails from their great elasticity.

5th. The freedom from noise.

6th. There is greater safety in case of accident, as they cannot be broken.

7th. The comfort of passengers is enhanced sufficiently to pay the expense, waiving all the other reasons that I have given.

Should this fail to satisfy any person enquiring, you are at liberty to refer to me, No. 150 Washington St., Jersey City. Yours respectfully,
T. L. SMITH, Supt.

—

New York, March 11, 1850.

I have used the Patent India-rubber Spring purchased of Mr. Ray, upon the cars of the New York and New Haven Railroad, and have found them efficient and economical; and when applied to the axles and draw springs, believe them to be quite equal to any in use. I have found a combination of these springs with a steel spring under the transom beam a very satisfactory arrangement, and am now using this plan in all new cars. Yours respectfully,
ROBERT SCHUYLER.

—

February 25, 1850.

From practical observation of the use of the India-rubber Car Springs, manufactured and sold by your company, we are entirely satisfied in their application, and do not hesitate to recommend them as elastic, durable, requiring no repairs for years, and retaining their consistency during all extremes of weather. We have applied them for the past two years, and consider them superior for all railroad purposes.
Yours truly,
OSGOOD BRADLEY, Car Builder, Worcester.
T. & C. WASON, do. Springfield.
DEAN, PACKARD & MILLS, do. do.
DAVENPORT & BRIDGES, do. Cambridgeport.

—

Office of the New Jersey Railroad Co.,
Jersey City, March 7, 1850.

This is to certify that we have had Mr. F. M. Ray's India-rubber Springs in constant use under our cars, and as Bumper Springs for upwards of two years, and they have in every way given perfect satisfaction.

The present form of spring we deem far superior to the form of Disk, having used both forms, although we have none of those made in Disks at present in use.

We take pleasure in recommending these springs to all railroad companies.
J. P. JACKSON, Vice Prest.
New Jersey Railroad and Trans. Co.

—

Roxbury, February 28, 1850.

In compliance with your request, I take great pleasure in stating the result of my experience in the use of "Ray's Patented Vulcanised India-rubber Car and Engine Springs." We have used them nearly two years, and never had one fail in any way. The *cold weather* does not affect *them*, as it has *other* rubber springs we have used.

With sixteen years' experience as superintendent of machinery on the Boston and Providence railroad, I take pleasure in saying that your springs are the best we ever used, or I ever saw used elsewhere. We have 20 cars rigged with them, of which I can say that the springs are as good now as when first applied. I put 24 lbs. of the rubber under the forward end of one of our heaviest engines, taking off 250 lbs. of steel springs—it has been in use 18 months, and is in as good condition now as when first put under the engine.
Very respectfully yours,
GEO. S. GRIGGS,
Supt. of Machinery, Boston and Prov. R.R.

Fall River, February 2, 1850.

In answer to yours of the 20th ult. I would say that this company has for some 10 or 12 months past been using "Ray's India-rubber Springs." We have applied them to both passenger and freight cars with uniform success. They have invariably preserved their elasticity and consistency through all the extremes of weather; and we are now applying them whenever the steel spring fails. I am well satisfied that they are particularly adapted for railroad purposes.
Very respectfully yours,
GEO. HAVEN,
Supt. Fall River Railroad.

—

Jersey City, March 9, 1850.

This is to certify that the present form of Mr. F. M. Ray's India-rubber Car Spring I consider far superior to the form of Disk, having used both forms.

I take pleasure in recommending these springs to all railroad companies. DAVID H. BAKER,
Foreman of Car Shop of N.J. R.R. & Trans. Co

—

Boston, March 5, 1850.

In answer to your enquiry about India-rubber Springs, I have to say that we have used them to a considerable extent on both freight and passenger cars, and also on several of our tenders; and I am very well satisfied that they answer all the purposes for which they are intended. I believe the India-rubber will soon supersede all other springs for cars and tenders. Yours truly, S. M. FELTON,
Supt. Fitchburg Railroad.

—

Old Colony Railroad Office,
Boston, March 6, 1850.

EDWARD CRANE, Esq.,
President New England Car Co.,

Dear Sir: In compliance with your request I would state that the Old Colony Railroad Comp'y have had in use upon their road, India-rubber Springs furnished by your company, for more than eighteen months past, during which time they have been extensively used under Passenger and Freight Cars, Locomotive Tenders, and for Drawer and Buffling Springs, with the most perfect success. The elasticity and consistency of the Rubber has never been unfavorably affected by either extremes of heat or cold—and from the experience which we have had in the use of Rubber Springs, I think them well adapted for railroad purposes—and therefore we have for some months past used Rubber almost exclusively, in all places where springs are required.
Respectfully yours, etc.,
JAS. H. MOORE,
Supt. O. C. Road.

—

Troy, February 27, 1850.

We have been using your India-rubber Car Springs for nearly two years—and we take pleasure in saying that in our opinion the rubber has to a certain extent already, and may eventually entirely supersede all other Springs for Railroad Car purposes. We now use it entirely for Draw Springs and Bumpers, considering it better and lighter than steel.

During our two years' experience in the use of it, we have not known any to lose their elasticity, or fail in any way; and we cheerfully recommend the rubber for railroad car springs. Very respectfully,
EATON, GILBERT & CO.

To Practical Machinists.

AN excellent opportunity now occurs to a practical Machinist, of WELL ESTABLISHED REPUTATION, and some capital, to engage extensively in the STEAM ENGINE, BOILER AND FOUNDRY BUSINESS.

An establishment is now ready for business, ample in all its details, including extensive wharf room, for any sized steamboats, and from its position, if properly conducted, will doubtless command a large share of business.

A practical Machinist, as a partner is required, to conduct the whole establishment: and only those FULLY COMPETENT need apply. Address (post paid) "MACHINE CO.," Box No. 741, Philadelphia, Pa.
1m14

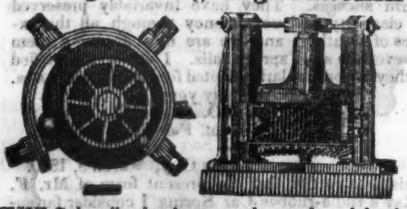
Etna Safety Fuse.

THIS superior article for igniting the charge in wet or dry blasting, made with DUPONT'S best powder, is kept for sale at the office and depot of
REYNOLDS & BROTHER,
☞ *Sole Manufacturers.* ☜
No. 85 Liberty St.
NEW YORK.
And in the principal cities and towns in the U. States.

☞ The Premium of the AMERICAN INSTITUTE was awarded to the *Etna Safety Fuse* at the late Fair held in this city.
November 3, 1849. 1y

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phœnixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has give universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll sounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery *for making Spikes*, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, *Agent*,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNdersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNdersigned, the *Original Inventor* of the *Plate Wheel* with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

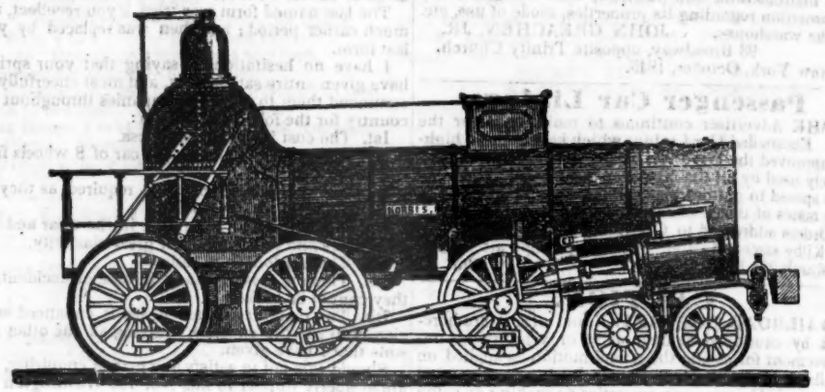
A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country. A. T.

Kensington, Philadelphia Co., March 12, 1848.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size.

Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tires are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE,
142 Front-street, New York.

☞ Orders for the above will be received and promptly attended to at this office. 32 1y.

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

P. A. BURDEN, *Agent*,
Troy Iron and Nail Factory, Troy, N. Y.

COLUMBUS, OHIO,

Railroad Car Manufactory.

RIDGWAYS & KIMBALL,

HAVE established at this central point, the manufacture of Passenger, Freight, Gravel and Hand Cars for Railroads, and assure all Western Railroad Companies that it will be their constant aim to procure the best materials and workmen, and to turn out the best kind of work at fair prices. Specimens may be seen on the Columbus and Xenia Railroad. The patronage of Railroad Companies is respectfully solicited. 1y8

To Inventors and Patentees.

OWEN G WARREN, ARCHITECT, Has had many years' experience as Agent for obtaining Patents, both in this country and Europe, and will transact such business promptly and reasonably. Persons at a distance can have their business done by correspondence—without the necessity of visiting this city or Washington. Office No. 94 Merchants Exchange, Wall st., corner of Hanover st., up stairs. 1y3

MR. HALE:—"The New England Car Co., having been engaged for the last six months in introducing the Vulcanized India-rubber Car Spaings upon the different railroads in this and other states, and having in particular introduced it upon the Boston and Worcester railroad with perfect success, were much gratified to find, by your paper of this morning, that the article had given satisfaction to the president of that corporation, and the terms of just commendation in which you were pleased to speak of it. But their gratification was scarcely equalled by their surprise, when, or arriving at the close of your paragraph, they found the results of all their labors attributed to a foreign source, with which the New England Car Co. has no connection. The material used on the Boston and Worcester railroad, and all the other railroads in this country, where any preparation of India-rubber has been successfully applied, is entirely an American invention, patented in the year 1844 to Charles Goodyear, of New Haven, Conn., and the application of it to this purpose and the form in which it is applied are the invention of F. M. Ray of New York. The only material now in use, and so far as has yet appeared, the only preparation of India rubber capable of answering the purpose, has been furnished under these patents by the New England Car Company, manufactured under the immediate inspection of their own agent. If any other should be produced, the right to use it would depend upon the question of its interference with Mr. Goodyear's patent. The New England Car Company have their place of business in this city at No. 99 State street, and are prepared to answer all orders for the Vulcanised India rubber Car Springs, of the same quality and of the same manufacture as those which they have already placed on your road, and most fo the other roads terminating in this city."

And yet Mr. Knevitt is using these experiments made upon the Springs of the Car Company to induce the public to purchase his springs, and is attempting to impose upon them the belief that the springs used were furnished by him! We ask whether such a course is honorable, or entitles his statements to much consideration from the public.

The above Springs are for sale 98 Broadway, New York, and 99 State street, Boston.

EDWARD CRANE Agent, Boston.
F. M. RAY, Agent, New York.

Boston, May 8, 1849.

Ballard's Improved JACK-SCREW.

PATENTED.

THE ADVANTAGES OF THIS Screw for Stone Quarries, Railroads, Steam Boiler Builders, and for other purposes are superior to any other similar machine.

The improvement consists in being able to use either end of the screw, as occasion requires.

It is capable of raising the heaviest Locomotive with ease, being portable, strong and powerful, and not likely to get out of order.

Many Railroad Companies and Boiler Makers have them in use—by whom they are highly recommended.

JACK SCREWS,
of various sizes, power and price, constantly on hand at the manufactory.

No. 7 Eldridge Street,
near Division Street.
New York, Jan. 19, 1850.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.

G. A. NICOLLS,
Reading, Pa.

Hydraulic Cement.

KINGSTON LIME AND CEMENT CO.
OFFICE
271 PEARL-ST.
N. Y.

HYDRAULIC CEMENT, OF BEST QUALITY, manufactured at their works, for sale in lots to suit purchasers.

Also, Ground Lime, a superior article for Builders.

ISAAC FRYER, Sec'y.

January 19, 1850. 1y

Engine and Car Works,
PORTLAND, MAINE.

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of $250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

RAILROADS.

EASTERN RAILROAD.

WINTER ARRANGEMENT.

On and after Monday, October 8, 1849, trains leave Boston daily (Sundays excepted);

For Lynn, 7, 8½, 10 a.m., 12½, 2½, 4, 4½, 6½, p.m.
Salem, 7, 8¾ 10, a.m., 12½, 2½, 4, 4½, 6½, p.m.
Manchester and Gloucester, 10 a.m., 4 p.m.
Newburyport, 7, a.m., 12½, 2½ 4½, p.m.
Portsmouth, 7, am., 2½, 4½, pm.
Portland, Me., 7, am., 2½, pm.

And for Boston,

From Portland, 8½ am., 4 pm.
Portsmouth, 7, 10¾*, am., 6¼*, pm.
Newburyport, 7¼, 11½*, am., 3½ 7*, pm.
Gloucester, 7¼, am., 1¼pm.
Manchester, 8 am., 2 pm.,
Lynn, 7¼, 8¾*, 9¼*, 10¾ am., 12 55*, 2¼* 4¼* 8¼* pm.
Salem, 7½, 8¼*, 9*, 10½ am., 12 40*, 2½* 4½,* 8*, pm.

**Or on their arrival from the East.*

Freight trains each way daily. Office 17 Merchants' Row, Boston.

Feb. 3. JOHN KINSMAN, Superintendent.

ALBANY AND BUFFALO RAILROADS.—Four Trains daily, Sundays excepted, viz: Leave Albany, 6 a.m., 9 a.m., 2 p.m., 7 p.m. Reach Buffalo, 15 hours, 18 hours, 23 hours, 18 hours. Arrive from Buffalo, 7 p.m., 2¼ a.m., 12½ m., 3½ p.m.

Passengers by the *Express Train* reach Buffalo from New York, and New York from Buffalo, in 24 hours. The Isaac Newton and Oregon connect at Albany with this Train. Baggage cars, with careful baggage masters, run through with all the trains.

For Schenectady, Saratoga Springs & Whitehall, Leave Albany at 7 a.m. and 2 p.m. For Schenectady only at 6, 7 and 9 a.m. and 12½, 2 and 7 p.m. For Erie Canal packets at 7 a.m. and 7 p.m. By Plank Road from Schenectady to Saratoga at all hours by stages, etc.

The *Eastern Trains* leave Albany at 7 a.m. and 3 p.m. The wagons of the company take baggage *free* between railroads and steamboats at Albany.

E. FOSTER, Jr., Sec'y
Albany and Schenectady Railroad Co.
Albany, August, 1849.

BOSTON AND MAINE RAILROAD.

Winter Arrangement, 1850.

Outward Trains from Boston

For Portland at 7 am. and 2½ pm.
For Rochester at 7 am., 2½ pm.
For Great Falls at 7 am., 2½, 3½ pm.
For Haverhill at 7 and 9½ am., 2½, 3½, 5½, pm.
For Lawrence 7, 7½, 9½ am., 12m. 2½, 3½, 4½ 5½, pm.
For Reading 7, 9½ am., 12m. 2½, 3½, 4½, 5½, 7½, 9½ pm.
For Medford 7½, 9½ a.m., 12½, 2½, 5, 6½, 9½ p.m.

The Station in Boston is on Haymarket Square.

CHAS. MINOT, Super't.

January 10, 1850.

NEW YORK AND HARLEM RAILROAD.
NEW ARRANGEMENT.

On and after Wednesday, October 17th, 1849, the Cars will run as follows, (Sundays excepted) until further notice:

Trains will leave the City Hall, New York, for—

Harlem and Morrisania at 6½, 8, 10, 11, 12 am., 2, 3½, 4, 5, 6½ pm.
New Village, at 8½, 10, 12 am., 3½, 5, 6½ pm.
Fordham and Williams' Bridge, at 8½, 10, 12 am., 2½ 3½, 5, 6½ pm.
Hunt's Bridge, Underhill's and Hart's Corners, at 8½, 10 am., 3½, 5 pm.
Tuckahoe and White Plains, at 8½, 10 am., 2½, 3½, 5 pm.
Pleasantville, New Castle, Bedford, Mechanicsville, Purdy's, Croton Falls, and intermediate stations, on signal, 8½ am., 2½, 3½ pm.
Brewster's, Towner's, Patterson, Paulding's, South Dover, Dover Furnace, and Dover Plains, 8½ am., 2½ pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave

Harlem and Morrisiana at 6 08, 7½, 8 37, 9, 10 6, 12 am., 1 43, 3 07, 3½, 5, 5 47 pm.
New Village, at 5 58, 8 27, 9 56 am., 1 33, 2 57, 5 36 pm.
Fordham and William's Bridge at 5½, 8 14, 9 43, 10 57 am., 1 20, 2 44, 5 24 pm.
Hunt's Bridge at 8 04, 9 33 am., 2 34, 5 16 pm. On signal.
Underhill's, at 7 56, 9 23 a.m., 2 26, 5 10 p.m. On signal.
Tuckahoe at 7 53, 9 18, 10 40 am., 2 23, 5 08 pm.
Hart's Corners at 7 38, 9 03 am., 2 08, 4 54 pm.—On signal.
White Plains at 7½, 8 55, 10 20 am., 2, 4 47 pm.
Davis' Brook at 8 40, 10 11 am., On signal. 4 39 pm. On signal.
Unionville, 8 27, 10 11 am. On signal. 4 29 pm.—On signal.
Pleasantville at 8 20, 9 56 am., 4 24 pm.
Champaqua, at 8 10, 9 50 am. On signal. 4 18 pm. On signal,
New Castle, at 7 56, 9 38 am.. 4 07 pm.
Bedford at 7 46, 9 32 am., 4 02 pm.
Mechanicsville at 7 36, 9 22 am., 3 52 pm.
Golden's Bridge, 7 28, 9 17 am. On signal, 3 47 pm. On signal.
Purdy's at 7 20, 9 09 am., 3 39 pm.
Croton Falls, at 7½, 9 04 am., 3 34 pm.
Brewster's, at 8 50 am., 3 20 pm.
Towner's, at 8 35 am., 3 05 pm.
Paterson, at 8 27 am., 2 57 pm.
Paulding's, at 8 17 am., 2 47 pm.
South Dover, 8 02 am., 2 32 pm.
Dover Furnace, 7 55 am., 2 25 pm.
Dover Plains, at 7 45 am., 2 15 pm.

The trains for Harlem and Morrisiana leaving City Hall at 6½, 8, 10, 11, 12, 2, 4 and 6½, returning from Morrisiana and Harlem at 6 08, 7½, 9, 12, 1 43, 3 07, 3½ and 5 o'clock, will land and receive passengers at 27th 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th and 132d streets.

The Dover Plains train from New York at 2½ pm., returning leaving Dover Plains at 7½ am., will not stop between White Plains and New York, (except at Tuckahoe, Williams' Bridge and Fordham,) unless to leave passengers coming from above Croton Falls.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 27th street.

Freight Trains leave New York at 1 o'clock pm.—Returning, leaves Dover Plains at 12 o'clock m.

For Sunday Aarrangements, see hand bills.

M. SLOAT, Sup't.

NEW YORK AND ERIE RAILROAD.

Change of Hours.

On and after Monday, May 6, 1850, the trains will leave as follows, by steamboat Thomas Powell, from the foot of Duane st., daily (Sundays excepted).

Breakfast and supper on board the boat.

Way and Mail Train—At 6½ a.m., stopping at all the stations—arriving at Corning and Jefferson about 10½ p.m., and at Buffalo next morning.

Night Train—At 5 p.m., stopping at all the stations and arriving at Geneva in time to connect with the express train from Albany, and arrive at Buffalo at 7 p.m. next day.

An Express Train will commence running in a few days, of which due notice will be given.

Freight Train.—Leave New York from foot of Duane st. daily, (Sundays excepted) at 5 p.m. Freight for Geneva, Rochester and Buffalo, forwarded by express freight train. CHAS. MINOT, Supt.

New York, May 2, 1850.

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.

This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.		Between Augusta and Dalton.	Between Charleston, and Dalton.
		271 miles.	408 miles.
1st class	Boxes of Hats, Bonnets, and Furniture, per cubic foot	$0 18	$0 28
2d class	Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class	Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class	Flour Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
	Cotton, per 100 lbs.	0 45	0 70
	Molasses per hogshead	8 50	13 50
	" " barrel	2 50	4 25
	Salt per bushel	0 18	
	Salt per Liverpool sack	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freights payable at Dalton.

F. C. ARMS,
44*1y Sup't of Transportation.

To Miners and Mining Companies.

THE undersigned would respectfully call the attention of those persons engaged in mineral operations on Lake Superior to the following list of articles which will be sold on accommodating terms, viz:

600 bbls. Corn fed No. 1 Mess Pork.
500 " Stall fed Mess Beef.
25,000 lbs. "Sugar cured canvassed" Hams.
2,200 " Dried Beef.
60,000 " "Kiln dried" Corn Meal,
500 bush. White "Field" Beans.
300 " Canada" Peas.
500 " Dried Apples.
100 bbls. and half bbls. "cucumber" Pickles.
50 " Sour Krout.
30 bush. Onions.
1,000 Beefs' Tongues Smoked and in Pickle.
10,000 lbs. "Mould" Candles.
10,000 " "Hard" Soap.

Also, a full and large supply of all articles that may be required by Mining Companies and those connected with them. C. A. TROWBRIDGE,

127 Jefferson Avenue, Detroit, Michigan.

LITTLE MIAMI RAILROAD.—SUMMER ARRANGEMENT.

Cincinnati and Sandusky.

FIRST Passenger Train leaves Depot on East Front street, at 5 o'clock 10 minutes A. M. stops for breakfast at Morrow, and arrives at Springfield at 11 10 A M. Leaves Springfield for Sandusky at 11 50 A. M.

Second Passenger Train leaves Depot 3 P. M. arrives at Springfield at 9 P.M. Passengers take tea at Springfield, and leaves for Sandusky at 9¼ P. M.

RETURNING—First Train leaves Springfield at 4 A. M. Stop for breakfast at Xenia, and arrives at Cincinnati at 10 15 A. M.

Second Train leaves Springfield at 2¼ P. M. Stop for tea at Morrow, and arrives at cincinnati, at 8¼ P. M.

Passengers taking the Morning Train arrive at Sandusky at 9 P. M. Those taking the Afternoon Train arrive at 7¼ A. M. next morning, and proceed directly on in the boats.

Passengers for columbus, Zanesville, Wheeling, and intermediate towns, should take the 5, 10 A. M., Train.

The Ohi Stage Company are running the following Lines in connection with the Trains:

A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 3 o'clock pm. train from Cincinnati.

Fare from Cincinnati to Xenia		$1 90
" "	Springfield	2 50
" "	Sandusky city	6 50
" "	Buffalo	10 00
" "	Columbus	4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENT, Superintendent.

☞ The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value above that amount.

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.

Summer Arrangement.
April 1st, 1849.—Fare $3.

Leave Philadelphia 8½ am., and 10 pm.
Leave Baltimore 9 am, and 8 pm.
Sunday—Leave Philadelphia at 10 pm.
" Baltimore at 8 pm.
Trains stop at way stations.

Charleston, S. C.

Through tickets Philadelphia to Charleston, $20.

Pittsburg and Wheeling.

Through ticket, Philadelphia to Pittsburg, $12.
" " Wheeling, 13.
Through tickets sold at Philadelphia office only.

Wilmington Accommodation.

Leave Philadelphia at 12 m. 4 and 7 pm.
Leave Wilmington at 7½ am., 4½ and 7 pm.

Newcastle Line.

Leave Philadelphia at 2½ pm.—Baltimore at 1½ pm
Fare $3.—Second class, $2.
N.B.—Extra baggage charged for.

I. R TRIMBLE, Gen. Supt.

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare.

Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains run daily, except Sundays, as follows:

Leave Baltimore at	9 am. and 3½ pm.
Arrive at	9 am. and 6½ pm.
Leave York at	5 am. and 3 pm.
Arrive at	12¾ pm. & 8 pm.
Leave York for Columbia at	1½ pm. & 8 am.
Leave Columbia for York at	8 am. & 2 pm.

Fare:

Fare to York	$1 50
" Wrightsville	2 00
" Columbia	2 12½

Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg	$9
Or via Lancaster by railroad	10
Through tickets to Harrisburg or Gettysburg	3

In connection with the afternoon train at 3½ o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at - 5¼ pm.
Returning, leaves Owing's Mills at - 7 am.

D. C. H. BORDLEY, Sup't.
31 1y Ticket Office, 63 North st.

PHILADELPHIA & READING RAILROAD

Passenger Train Arrangement for 1850.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock a.m.

The Train from Philadelphia arrives at Reading at 12 18 m.

The Train from Pottsville arrives at Reading at 10 43 a.m.

Fares.	Miles.	No.1.	No.2.
Between Philad. and Pottsville,	92	$3·50	and $3·00
" " Reading,	58	2·25	1·90
" Pottsville "	34	1·40	1·20

Five minutes allowed at Reading, and three at other way stations.

Passenger Depot in Philadelphia corner of Broad and Vine streets. 8tf.

BALTIMORE AND OHIO RAILROAD AND WASHINGTON BRANCH.

On and after January 1, 1850, Passenger Trains will run as follows:

Leave Baltimore for Ellicott's Mills, Frederick, Harper's Ferry, Martinsburg, Hancock and Cumberland, every morning at 7½ o'clock. This line carries the Great Mail, and connects with Post Coaches at Cumberland, for Wheeling and Pittsburg, over the National Road. Also with the Winchester Trains, at Harper's Ferry. N.B.—Passengers for Pittsburg take the steamers of the Monongahela slack water navigation at *Brownsville*, only 76 miles from Cumberland.

Leave Baltimore for Ellicott's Mills, Frederick and Harper's Ferry, daily, except Sunday, at 4½ p.m.

Leave Baltimore for Washington City, daily, at 6 a.m. and 5 p.m.—daily, except Sunday, at 9 a.m. The early train connects with the Great Southern Line, via Fredericksburg and Richmond, to Charleston.

Leave Cumberland for Baltimore, etc., at 8½ a. m., daily, connecting with the train from Winchester at Harper's Ferry—with the Evening Train to Washington City, at the Relay House—and with the Evening Train to Philadelphia, at Baltimore. Time for arriving at Baltimore, 5½ p.m.

Leave Harper's Ferry for Baltimore, daily, except Sunday, at 7½ a. m—taking in Passengers who leave Frederick at 8½ a.m.

Leave Washington for Baltimore, daily, at 6 a.m. & 5½ p.m., and *daily, except Sunday*, at 9½ a. m. The early train connects at the Relay House with the morning line to Cumberland and the West, and at Baltimore with the day line to Philadelphia and New York.

Through tickets are sold at *Philadelphia and Baltimore* for Pittsburgh and Wheeling, and at *Philadelphia and New York* for Charleston, S. C., at the following

RATES OF FARE.

	To Pittsburg. In winter.	To Pittsburg. Summer.	Wheeling. Win.	Wheeling. Sum.	Charleston.
From Philadelphia,	$13	$12	$14	$13	$20
" Baltimore,	11	10	12	11	
" New York,					20

Passengers leaving New York not later than the afternoon line via Newark, etc., reach Baltimore in season to take the next morning's lines to the South and West.

Passengers leaving Cumberland in the morning and Washington in the evening lines, reach Baltimore in season to proceed to Philadelphia by the evening train at 8 p. m.—so as to reach New York before noon the next day.

An Emigrant line by burthen cars, leaves Baltimore every morning, except Sundays, at 4 o'clock—connecting with a line of the previous day from N. York—and at Cumberland with a wagon line to Pittsburg or Brownsville and Wheeling. Fare by this line:

From New York to Pittsburg,	$8 00
" Philadelphia "	6 50
" Baltimore "	5 00

By order, J. T. ENGLAND, Agent.

SOUTH CAROLINA RAILROAD.—A PASSENGER Train runs daily from Charleston, on the arrival of the boats from Wilmington, N. C., in connection with trains on the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tuscumbia Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily	$26 50
Fare through from Charleston to Huntsville, Decatur and Tuscumbia	22 00

The South Carolina Railroad Co. engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

JOHN KING, Jr., Agent.

LAKE SUPERIOR LINE.
Cleveland and Detroit,

TO

SAULT STE. MARIE, CARP RIVER, COPPER HARBOR, EAGLE RIVER, ISLE ROYAL, ONTONAGON AND LA POINT.

The Proprietors of this line having added largely to their facilities for transportation on this route, will be prepared to ship Goods to any part of Lake Superior during the coming season, and contract for the delivery of Copper Ore to either Boston, New York, or Pittsburg, being connected with the Troy and Western Line, from Detroit to New York, and a Daily line of Canal Boats

FROM CLEVELAND TO PITTSBURG.

Lakes Huron and Erie.

For this portion of the route, the Proprietors are fitting up a large Boat, with a powerful low pressure engine, and a spacious upper cabin, with state rooms, to take the place of the Franklin, which will leave CLEVELAND every *Monday Evening* at 7 o'clock, and DETROIT every *Tuesday Afternoon* at 2 o'clock, going to MACKINAW and the BRUCE MINES, and arriving at SAULT STE. MARIE on Thursday morning. The Franklin will leave Detroit every Friday for Mackinaw and Sault Ste. Marie, via the Bruce Mines. For the transportation of heavy masses of *Copper*, a Propeller will make trips as occasion may require.

Lake Superior.

Mr. McKnight, one of the Proprietors, is constructing a Wharf to the Channel Bank, at the head of the Portage, which will enable them to load their Propellers, NAPOLEON AND INDEPENDENCE, with but 24 hours' detention at Sault Ste. Marie. One of the Propellers will leave every *Friday*, making a trip through the Lake, touching at Carp River, Ontonagon and Isle Royal.

The great expense incurred in building wharves to facilitate business, it is hoped, will entitle the Proprietors of this Line to Patronage. Goods shipped by either G. WILLIAMS & CO., or S. P. BRADY, Agents, Detroit, will be receipted through to their destination on Lake Superior. Letters addressed to S. McKNIGHT, Detroit, or Sault Ste. Marie, will receive attention. Supplies will be purchased and delivered at any point on Lake Superior, on the best possible terms, and all orders filled with articles of as good quality as the market affords.

Canada Line.

To facilitate the forwarding of Goods for the Canada Companies, a connection has been made with PARK & CO., managing owners of the Propeller *Earl Cathcart*, forming a direct line from Montreal to the Bruce Mines and Sault Ste. Marie. Goods sent by this line, care of PARK & CO., Amherstburg, or CHAS. HUNT, Esq., Windsor, will be immediately forwarded, and at prices decidedly to the advantage of parties in Toronto or other Canadian Ports.

S. M'KNIGHT,
J. R. LIVINGSTON,
P. B. BARBEAU.

January, 1850.

AGENTS.

G. Williams & Co., } Detroit.
S. P. Brady, }
P. L. Sternberg & Co., Buffalo.
Charles Hunt, Windsor.
Park & Co., Amherstburg.
W. A. Otis & Co., } Cleveland.
Crawford and Chamberlain, }
Rice, Clapp & CO., New York.
W. M. Gorrie, Toronto.

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, *Patterson, N. J.* The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tires; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tires; Axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
Patterson, N.J. or 74 Broadway, New York.

CENTRAL RAILROAD FROM SAVANNAH TO MACON, (Ga.) 190½ miles.

Passenger Trains leave Savannah and Macon daily at 7 a.m.
Passenger trains arrive daily at Savannah, 6 15 p.m.
" " " " Macon, 6 45 p.m.

This road, in connection with the Macon and Western road from Macon to Atlanta, and the Western and Atlantic road from Atlanta to Dalton, now forms a continuous line of 391½ miles in length* from Savannah to Dalton, Murray county, Ga. and with the Memphis Branch railroad, and Stages connect with the following places:

Tickets from Savannah to Macon,			$5 75
" " "	Atlanta,		9 50
" " "	Augusta,		6 50
" " "	Columbus,		15 00
" " "	Opelika,†		17 00
" " "	Jacksonville, Ala.,		20 00
" " "	Talladega, Huntsville Decatur,	Ala.,	22 00
" " "	Tuscumbia, Ala.,		22 50
" " "	Tuscaloosa, Ala.,		
" " "	Columbus, Miss, Aberdeen, " Holly Springs		28 00
" " "	Nashville, Tenn.		
" " "	Murphreesboro' Columbia, do.,		25 00
" " "	Memphis, do.,		30 00

An extra Passenger Train leaves Savannah on Saturdays, after the arrival of the Steam-ships from New York, for Macon, and connects with the Macon and Western railroad; and on Tuesdays, after the arrival of the Macon and Western cars, an extra Passenger Train leaves Macon to connect with the Steam ships for New York.

Stages for Tallahasse and intermediate places connect with the road at Macon, Mondays, Wednesdays, and Fridays, and with Milledgeville at Gordon daily.

Passengers for Montgomery, Mobile and New Orleans take stage for Opelika from Barnesville through Columbus, a distance of 97 miles, or from Griffin thro' West Point, a distance of 93 miles.

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* The Western and Atlantic railroad will soon be completed between Dalton and Chattanooga, a distance of 423½ miles from Savannah, of which due notice will be given.

† Head of the West Point and Montgomery railroad, on which the fare to Montgomery is about $2.

RATES OF FREIGHT FOR MERCHANDIZE GENERALLY, FROM SAVANNAH TO MACON.

Measurement Goods.—Boxes of hats, bonnets, furniture, shoes, saddlery, dry-goods, and other measurement goods, per cubic foot - - - 13 cents.
Crockery Ware, in crates, boxes or hhds, per cubic foot. - - - - - 10 "
Goods by Weight, 1st class.—Boxes of glass, paints, drugs & confectionary, per 100 lbs., 50 "
2d class—Sugar, coffee, rope, butter, cheese, lard, tobacco, leather, hides, copper, sheet and hoop iron, tin, hard and hollow ware, rice, boxes soap and candles, bagging, and other heavy articles not enumerated below, per 100 lbs., - - - - - 45 "
3d class—Flour, bacon, liquors, pork, beef, fish, tallow and beeswax, per 100 lbs., 40 "
4th class—Mill-gearing, pig and bar iron, grind and millstones, nails, spikes and coal, 100 lb. 30 "
Barrels of beets, bread, crackers, potatoes, ice, fruit, oysters, onions, and all light bbls, each, 75 "
Oil and molasses per hhd., (smaller casks in proportion) - - - $6 00 "
Salt per sack not exceeding 4 bushels, - 50 "

☞ Goods consigned to Thos. S. Wayne, Forwarding Agent, Savannah, will be forwarded free of commission. WM. M. WADLEY, Supt.

Savannah, Ga., February 24, 1850.

ENGINEERS' AND SURVEYERS'
INSTRUMENTS MADE BY
EDMUND DRAPER,
Surviving partner of
STANCLIFFE & DRAPER.

No 23 Pear street, near Third, below Walnut, Philadelphia.

GREAT NORTHERN & SOUTHERN MAIL ROUTE. From New York to Charleston, S. C. daily, via *Philadelphia, Baltimore, Washington City, Richmond, Petersburg, Weldon and Wilmington, N. C.*

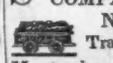
Travellers by this route, leaving New York at 4½ p. m., Philadelphia at 10 p.m., and Baltimore at 6 a.m., proceed without delay at any point on the route, arriving at Richmond, Va., in a day, and at Charleston, S. C., in two and half days from New York.

Through tickets from New York to Charleston, $20 00
" " Baltimore to Richmond, 7 00
" " " " Petersburg, 7 50

For tickets to Richmond and Petersburg, or further information, apply at the *Southern Ticket Office, adjoining the Washington Railroad Ticket Office, Pratt Street, Baltimore.* STOCKTON & FALLS.

October, 1849.

ST. LAWRENCE & ATLANTIC RAILROAD COMPANY.



Notice is hereby given that the Trains run twice per day between Montreal and St. Hyacinth, leaving each terminus alternately, until further notice.

Leaving St. Hyacinth at - - 7 am.
" " - - 3 pm.
Leaving Montreal at - - - 10 am.
" " - - - 6 pm.

THOMAS STEERS, *Secretary.*

May 31, 1849.

WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA, GA., TO CHATTANOOGA, TENN. 140 Miles.

PASSENGER SCHEDULE.

Leave Chattanooga daily, Sundays excepted, at 8½ a.m.
Arrive at Kingston . . . by 12 m.
" Dalton . . . by 3 p.m.
" Chattanooga . . . by 6 "
Leave Chattanooga daily, Sundays excepted, at 7 a.m.
Arrive at Dalton . . . by 9½ "
" Kingston . . . by 12 m.
" Atlanta . . . by 4 p.m.

The fare is now permanently reduced to *three* cents per mile for way as well as through Passengers; children and servants *two* cents per mile.

There are two Railroad routes from Atlanta to the Seaboard, viz: one by the Georgia Railroad to Augusta, and thence to Charleston by the South Carolina Railroad; the other by the Macon and Western Railroad to Macon, and thence to Savannah by the Central Railroad.

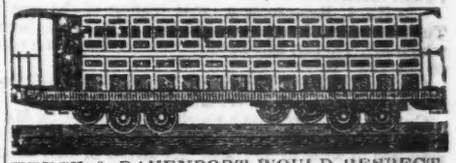
At Kingston, 60 miles north of Atlanta, the Rome Railroad branches off to Rome on the Coosa river, which admits of steamboat navigation as far down as Greensport in Ala. Mail stages are in operation from Rome leading towards Tuscaloosa, Ala., Columbus, Miss., Memphis, Tenn., etc.

At Dalton, 100 miles north of Atlanta, a line of stages branches off to Knoxville, Tenn., which will be superseded by the East Tennessee and Georgia Railroad as rapidly as the same is completed.

At Chattanooga a number of steamboats are in successful operation on the Tennessee river, and from that terminus of the road stages run to Nashville, which will be superseded by the Nashville and Chattanooga Railroad as rapidly as the same is completed.

WM. D. FULLTON, Supt. Transp.
Transportation W. & A. R. R., }
Atlanta, March, 1850. }

CAR MANUFACTORY
CINCINNATI, OHIO.



KECK & DAVENPORT WOULD RESPECTfully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.

Cincinnati, Ohio, Oct. 2, 1848. 44tf

FOWLER M. RAY'S
METALLIC INDIA RUBBER CAR SPRINGS.

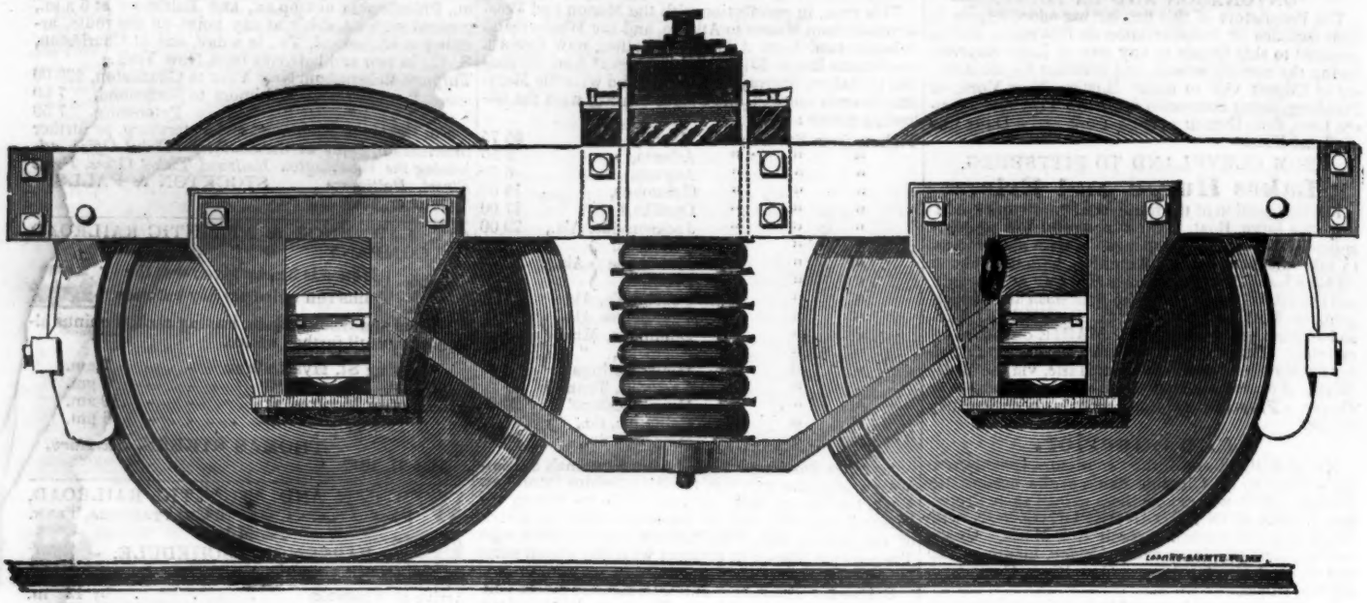


Fig. 1.

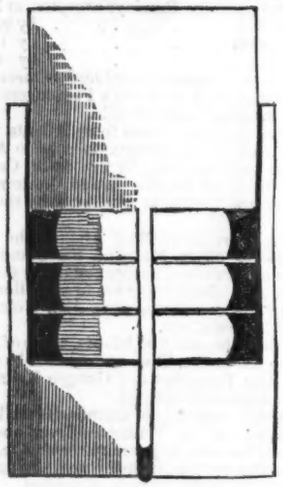


Fig. 2.

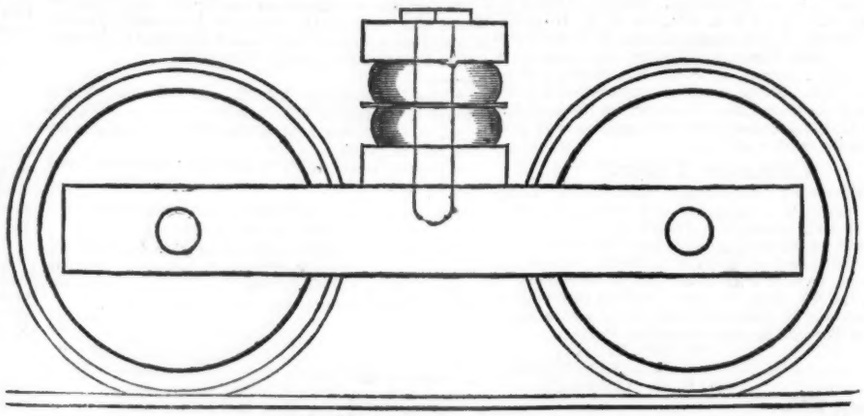
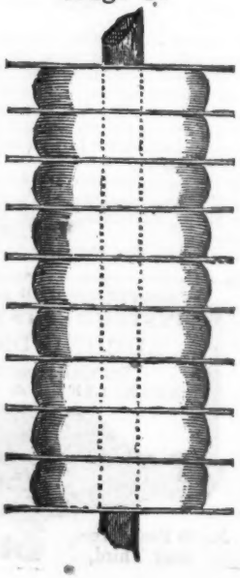


Fig. 3.



So much has been published for the purpose of misleading the public in regard to the inventorship of the India-rubber Railroad Spring, patented in the United States by Mr. W. C. Fuller, that the New England Car Company, proprietors of this invention, have deemed it proper, for the information of Railroad Companies, Car Builders and the public generally, to lay before them the facts upon which they found their claim to this invention, and to a Patent therefor.

Cut No. 1, Represents a cross section of the first model made by Mr. Tucker, under the direction of Mr. Ray, in the summer of 1844, and to which Mr. Tucker, Mr. Bradley and Mr. Bannester testify as being the model marked "B."

Cut No. 2, Represents the model made in 1845, to which Mr. Osgood Bradley and Gen. Thos. W. Harvey have testified.

Cut No. 3, Represents a rough sketch made by Mr. Ray in 1844, which he gave to a man about departing for England to take out some patents, who promised to write to Ray after his arrival in that country—which promise he has probably forgotten.

Mr. W. C. Fuller, of England, patented the above Spring in that country on the 23d October, 1845. He filed his enrollment April 23d, 1846, and on the 22d October, 1846, he took out a patent in the United States under the title, "For Improvement in Railway Carriages," when the improvement consisted in the spring, and not in the carriage.

The reader will perceive by the annexed testimony, that the India-rubber Railroad Car Spring was invented by Mr. Ray about two years previous to the date of Mr. Fuller's enrollment.

The Depositions are omitted for want of room, but will be published in full in the course of a few weeks.

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☞ LETTERS and COMMUNICATIONS to this Journal may be directed to the *Editor*,
HENRY V. POOR,
136 Nassau Street.